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THESIS

**SUBSTANCE TESTING IN THE FIRE SERVICE:
MAKING PUBLIC SAFETY A MATTER
OF NATIONAL POLICY**

by

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March 2014

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MAKING PUBLIC SAFETY A MATTER OF NATIONAL POLICY**

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ABSTRACT

The state of fire service substance-testing policy nationwide, and what it should be, is the subject of this project. This thesis analyzed 12 substance-testing policies from fire departments across the country. The project looked at the language fire departments were using to convey the intent, process, and consequences of their policy. Common themes emerged as each policy was examined. However, upon closer examination, more inconsistency was found than uniformity. Differences ranged from policy purposes to prevailing guidance to types of substances tested for, threshold levels, and employee treatment, with the greatest difference found in the terminology. As a result of the analysis, this thesis identifies best practices and required components of a standardized national substance-testing policy, and asserts that such a national model should be implemented.

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TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	PROBLEM SPACE	1
B.	RESEARCH QUESTION	4
C.	METHOD	4
D.	OVERVIEW OF UPCOMING CHAPTERS.....	5
II.	LITERATURE REVIEW	7
A.	INTRODUCTION AND OVERVIEW	7
B.	FIRST RESPONDERS AND OCCUPATIONAL STRESS	8
C.	ADDICTION AND ABUSE	9
D.	TREATMENT.....	12
E.	PRIVACY AND TESTING.....	13
III.	CRITERIA / THEMES	19
A.	COST.....	19
1.	Actual Cost	19
2.	Insidious Cost	21
B.	LEGALITY—FEDERAL, STATE AND LOCAL	25
1.	Department of Transportation (DOT), Code of Federal Regulations (CFR)—U.S. DOT Procedures for Transportation Workplace Drug and Alcohol Testing Programs (49 CFR Part 40)	26
2.	Department of Health and Human Services/Substance Abuse and Mental Health Services Administration (SAMHSA)	29
3.	Americans with Disabilities Act of 1990	31
4.	Drug-Free Workplace Act of 1988 U.S. Code Title 41—Public Contracts.....	33
5.	Title 21 United States Code (USC) Controlled Substances Act.....	35
C.	LOGISTICS.....	36
1.	Communicating Protocols and Conducting Testing.....	37
2.	Testing Method and Collection.....	37
3.	Privacy, Chain of Custody and Testing	40
4.	Handling Results and Employee Disposition.....	41
D.	TECHNICAL RELIABILITY.....	44
1.	Receiving.....	45
2.	Forensic Lab and Initial Testing	47
3.	Confirmatory Testing	48
4.	Disposition and Disposal	49
IV.	DATA COLLECTION	53
A.	SAMPLE SELECTION.....	53
B.	SAMPLE DATA AND SOURCES.....	54
C.	LIMITATIONS.....	55

V.	ANALYSIS PART I: QUALITATIVE DATA CODING SUMMARY FINDINGS.....	59
A.	UNIVERSAL TO ALL	59
B.	COMMON TO MOST	61
C.	RANDOM/UNSYSTEMATIC.....	63
D.	TOTALLY ABSENT	73
VI.	ANALYSIS PART II: THEMES, FINDINGS AND RECOMMENDATIONS...77	
A.	POLICY THEMES AND SUB-THEMES	77
1.	Policy	77
2.	Terminology.....	80
3.	Cause or Impetus for Testing.....	90
4.	Testing Protocols.....	93
5.	Administrative Differences	97
6.	Employee Treatment	99
7.	Standards Difference	103
VII.	FINDINGS, RECOMMENDATIONS, AND CONCLUSION	105
A.	WHAT SHOULD A NATIONAL MODEL POLICY LOOK LIKE?	106
1.	Department of Transportation (DOT) Policy.....	106
B.	IMPLEMENTATION CHALLENGES AND FIRST STEPS.....	111
1.	Implementation Challenges.....	111
2.	First Steps to Implementation.....	111
	LIST OF REFERENCES.....	113
	INITIAL DISTRIBUTION LIST	121

LIST OF TABLES

Table 1.	DOT Threshold Criteria (from “Title 49—Transportation, Procedures for Transportation Workplace Drug and Alcohol Testing Programs, 2012d).....	28
Table 2.	Alcohol Concentration Levels by Department	66
Table 3.	Prior Use Language by Department.....	67
Table 4.	Immediate Disposition of FER by Department	68
Table 5.	Testing Facilities Used by Department.....	69
Table 6.	Testing Method Used by Testing Facilities by Department	70
Table 7.	Use/Detection and Conduct by Department	71
Table 8.	Department Specifics	77
Table 9.	Individual Departmental Policy Purposes.....	79
Table 10.	Types of Substances Tested for (DC Fire & EMS, Chicago, Seattle, FDNY, Arlington, Austin)	83
Table 11.	Types of Substances Tested for (San Antonio, Boston, Los Angeles, Dallas, Atlanta, Minneapolis)	83
Table 12.	Prior Use Language by Department.....	88
Table 13.	Conduct Covered by Department.....	89
Table 14.	Who Makes the Selection by Department	93
Table 15.	Number of Employees Tested by Department.....	94
Table 16.	Alcohol Concentration Levels by Department	94
Table 17.	Testing Facilities Used by Department.....	97
Table 18.	Immediate Disposition of FFR by Department.....	100

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LIST OF ACRONYMS AND ABBREVIATIONS

AAMRO	American Association of Medical Review Officers
ACOEM	American College of Occupational & Environmental Medicine
ADA	Americans With Disabilities Act
ASD	Alcohol Screening Devices
BAC	blood alcohol concentration
BAT	breath alcohol technician
CBA	collective bargaining agreement
CDCP	Centers for Disease Control and Prevention
CDL	commercial driver's license
CFR	Code of Federal Regulations
COA	City of Atlanta
CPL	conforming products lists
DATIA	Drug and Alcohol Testing Industry Association
DEA	Drug Enforcement Administration
DHHS	Department of Health and Human Services
DOL	Department of Labor
DOT	Department of Transportation
DUI	driving under the influence
DWI	driving while intoxicated
EAP	employee assistance program
EBT	evidential breath testing
EEOC	Equal Employment Opportunity Commission
EMIT	enzyme multiplied immunoassay technique
FAA	Federal Aviation Administration
FMLA	Family Medical Leave Act
GC	gas chromatography
GC/MS	gas chromatography/mass spectrometry
HHS	Health and Human Services
HIPAA	Health Insurance Portability and Accountability Act of 1996
HR	Human Resources
IAFC	International Association of Fire Chiefs
IAFF	International Association of Firefighters
IATA	International Air Transporter Association
IITF	Instrumented Initial Test Facility

LC	liquid
MDA	methylenedioxyamphetamine
MDEA	methylenedioxyethylamphetamine
MDMA	methylenedioxymethamphetamine
MFD	Minneapolis Fire Department
MRO	medical review officer
NFPA	National Fire Protection Association
NHTSA	National Highway Traffic Safety Administration
NIDA	National Institute on Drug Abuse
NIOSH	National Institute for Occupational Safety and Health
NLCP	National Laboratory Certification Program
OSHA	Occupational Safety and Health Administration
PCP	phencyclidine
PFC	police and fire clinic
PTSD	posttraumatic stress disorder
QC	quality control
SAMHSA	Substance Abuse and Mental Health Services Administration
SAP	substance abuse professional
THCA	tetrahydrocannabinol-9-carboxylic acid
USC	United States Code
USFA	U.S. Fire Administration

EXECUTIVE SUMMARY

The Department of Homeland Security recognizes the role firefighters have in responding to and recovering from emergencies and disasters. To perform these responsibilities effectively, it is expected that firefighters be physically and mentally able to do their job. Mind-altering substance use diminishes a firefighter's ability. The use of illegal substances, and the inappropriate use of prescribed medications and alcohol by firefighters is concerning for a number of reasons, namely safety. Firefighters who choose to use mind-altering substances are harming themselves, endangering other firefighters by putting the public at risk, and doing a disservice to the career field. For these reasons, fire chiefs and fire departments alike are tasked with devising policy to dissuade use. The project explores substance-testing policy in the fire service and ways to streamline and improve what is currently being used.

Pre-employment substance testing is the most common form of testing conducted by employers—fire departments included. However, once firefighters are hired, the type of substance testing they are exposed to varies from department to department. This thesis assessed variations between policies.

Of the 30,000 plus fire department in the United States, eight percent are career. The departments whose policies were used for this project are career departments. Twelve substance-testing policies from fire departments across the country were used to gain an understanding of the current state and what it should be. The substance policies were from Washington, DC, Chicago, Seattle, New York City, Arlington County, Virginia, Austin, Texas, San Antonio, Texas, Boston, Los Angeles, Dallas, Atlanta, and Minneapolis. These large, professional agencies were chosen under the assumption that they would have advanced policies on many matters. No correlative proof exists between substance use and the size of an agency or city. However, the larger departments may be better situated to handle legal matters and be more experienced with human resources issues. Using a smaller sample was more practical given that a broad survey was not workable.

Literature related to this subject addressed first responders and occupational stress, addiction and abuse, treatment, and privacy and testing. Writings could not be found on substance policy per se in the fire service, which speaks to the timeliness of this project. An inductive approach provided an orientation to the policies. Relevant commonalities, anomalies, and patterns of substance testing and testing regulations emerged from the literature and the 12 policies. The qualitative data identified the most pertinent differences, which were used to construct an in-depth policy comparison.

Four criteria for substance testing were used to establish significant points of consideration for policy development or practice relative to the fire service: cost, legality, logistics, and technical reliability. Even with this information, what a good policy should look like or what standards or best practices among fire agencies might be remained unanswered. Making contact with department personnel may have answered lingering questions but this and other limitations and biases prevented further information from being obtained. Although random testing was common across most of the departments, and it is presumed that detection occurs, more inconsistency than similarity was found.

Inconsistencies included policy purposes, terminology, prevailing guidance, impetus for testing, tested for substances, threshold levels, employee treatment, and legal standards, which are troubling inconsistencies for an issue that is undoubtedly high-consequence. An early thought was that the strictest policy or zero-tolerance would be the most effective in lowering substance use. However, the zero-tolerance concept is not a guarantee of deterrence. Nor does a negative test result indicate the absence of substances. It simply means thresholds cutoffs were not met, which is cause for concern as well. Nevertheless, a model or ideal substance policy that casts the widest net of detection, early, is inexpensive, highly accurate, and reliable, before something happens or someone is hurt, provides treatment and rehabilitation for the firefighter, and returns a fit firefighter to duty.

A national substance testing policy would streamline policy language, align fire departments with one another and build on existing fitness for duty criteria. It would also take the burden of creating and maintaining policy off fire departments; thereby, reducing confusion and ambiguity in individually drafted policies. Such a policy already exists that

is reliable, tests randomly, inexpensively, effectively and efficiently, and offers the least operational and administrative interference, the Department of Transportation (DOT)—Code of Federal Regulations (CFR)—Procedures for Transportation Workplace Drug and Alcohol Testing Programs (49 CFR Part 40). If not DOT, then customizable non-DOT is also an option. Use of this language also allows for language and process streamlining but adds additional panel testing to expand substance detection. Non-DOT language is widely used in the private sector. DOT and non-DOT provisions are translatable to volunteer, paid-on-call, and wild land firefighting agencies.

Therefore, the conclusion is made that language exists in DOT and non-DOT guidelines that if implemented, would streamline substance-testing policy across the fire service. However, implementation of a comprehensive change of this magnitude may be challenging. These challenges include cultural resistance, bringing an unflattering issue to the forefront, substance use not being seen as a problem, unions resisting in the protection of their membership, costs myths and uncertainties, and local statutes and other regulatory factors.

Broad implementation will need to occur in stages. Of key importance is gaining support from federal and national agencies and groups. Obtaining endorsements from the U.S. Fire Administration (USFA), National Fire Protection Association (NFPA), Occupational Safety and Health Administration (OSHA), National Institute for Occupational Safety and Health (NIOSH), the International Association of Fire Chiefs (IAFC) and the International Association of Firefighters (IAFF) is an important first step. Aside from fire departments independently adopting this concept, local conditions determine at what point a fire department will implement random testing.

The benefits of revising substance-testing policy across the fire service outweigh the risks associated with inaction. The focus of substance testing policy is firefighter and public safety. Change of any kind is difficult but randomizing substance-testing policy across the fire service is a significant change. Yet, nothing was found in the analysis or research to indicate that this concept is baseless.

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I. INTRODUCTION

A. PROBLEM SPACE

The images of a firefighter carrying the limp, bloody body of a toddler after the Oklahoma City bombing, debris-covered firefighters standing atop the wreckage in New York after 9/11, and the sooty, exhausted men and women battling the fires that raged on Long Island after Hurricane Sandy represent firefighters who respond to all kinds of disasters. Emergency services—a system of prevention, preparedness, response, and recovery—serve as the nation’s first line of defense in preventing and mitigating risks from terrorist attacks, man-made incidents, and natural disasters (“Emergency Services Sector,” 2013). Despite the inherently dangerous nature of firefighting, the fire service is one of the most safety-conscious professions in existence. Standards and protocols guide every aspect of the business to insure safety, from personal protective equipment, to physical and mental fitness requirements, to elaborately planned and executed tactical operations. In contrast to this careful forethought and detailed safety standards, no such national zero-tolerance policy protects firefighters from substance use by colleagues. Firefighters who use substances pose safety hazards to themselves, their colleagues, and to the public.

Substance use has concerned experts in the fields of general psychiatry, psychology, experimental psychology, and behavioral research who have examined substance use treatment, treatment outcomes and effectiveness, among the general public since the 1970s; treatment practices developed as a way of dealing with the dangerous effects of substances (“Drug Abuse Treatment Outcomes Studies Background,” n.d.). In 1989, a provision to the Fourth Amendment allowed substance testing of individuals working in safety-sensitive jobs (Aalberts & Rubin, 1991). The provision contributed to deterring substance use in safety-sensitive work environments, and the agencies and departments of the federal government, and the military. Many law enforcement agencies

adhere to the provision's stricter testing guidelines.¹ Substance use among active duty military personnel dropped steadily following the implementation of a strict intervention program in 1981 (Mehay & Webb, 2007, pp. 2743–51).

The fire service at large has not fully incorporated random substance testing of firefighters into its standard operating procedures, which creates a policy gap compared to other agencies. To achieve resiliency and effective emergency response to disasters, the concept of standardized substance testing throughout the fire service—career, volunteer, paid on-call and wild-land—relies on pre-employment, reasonable suspicion, and post-incident substance testing practices. The zero-tolerance convention does not guarantee the elimination or even reduction of substance usage, but it establishes an expectation of zero-tolerance that some large fire departments have embraced. Yet, with fire departments distributed so widely and unevenly across the country, a number of fiscal, cross-jurisdictional, and political factors may hinder uniformity. Funding, local charters and ordinances, firefighter and union opposition, lack of policy knowledge, higher priorities, political support, legal or legislative challenges, and employee mistrust challenge more stringent substance testing in the fire service.

Police officers, firefighters, and emergency services personnel often witness or intervene in incidents involving fatal accidents, violent crime, child abuse, homicide, suicide, rape, and other traumatic events as part of their usual duties (Marmar et al., 2006, pp. 1–18). Post-traumatic stress is an occupational hazard. Extreme physical exertion is also a normal element of a firefighter's job, and injuries are common. The occupational and emotional exhaustion associated with being a firefighter may create shift work stress because repeated shift work leads to strain (Jamal & Baba, 1992, pp. 449–64; Kandolin, 1993, pp. 141–47). Many firefighters unsuccessfully use substances to contain stress. Addiction science exposes the failure of interventions and policies aimed at achieving abstinence among those who employ substances to alter consciousness (Kushner, 2009, pp. 228–30). According to the Substance Abuse and Mental Health Services

¹ The Office of Drug and Alcohol Policy and Compliance advises the Secretary of the Department of Transportation (DOT) on national drug testing and control issues and is the principal advisor to the Secretary on rules related to the drug and alcohol testing of safety-sensitive transportation employees in aviation, trucking, railroads, mass transit, pipelines, and other transportation industries.

Administration's National Survey on Drug Use and Health, 23.5 million persons aged 12 or older needed treatment for a substance use problem in 2009 (National Institute on Drug Abuse, 2011).

Firefighters are not prohibited from using alcohol, or becoming addicted to illegal drugs or legally prescribed drugs. Prescription drug use is on the rise as the nation's fastest-growing substance problem among the general population. The Centers for Disease Control and Prevention (CDCP) classifies the illegal use of prescription drugs as an epidemic (White House, The, 2012). Firefighters, as part of the general population, may be included in these statistics. As substance use has become a nationwide problem, public employers, such as fire departments, are testing employees for substance use; although fire departments want substance-free employees, they must recognize the legal obstacles that limit their power to test for substances; as such, fire departments can only test employees for substance use in compliance with the Fourth Amendment (Fish, 2011, vol. 2). The language of the Fourth Amendment allowing substance testing of firefighters is a modification.² With allowances in place that permit substance testing in safety sensitive jobs, investigating the substance testing practices currently in use by some departments will provide insight into methods, challenges, logistics, and legalities, as well as other concerns these organizations have faced and will continue to face.

During this project, many conflicting terms emerged to describe drugs, alcohol and prescription drugs, such as use, abuse, misuse, addiction, and consumption. Similarly, words referring to illegal or illicit drugs, the inappropriate use of legally prescribed medications, and alcohol, also repeated. Since this analysis addresses testing for many circumstances and substances, this thesis uses the term "use" to refer to use, abuse, misuse, addiction, and consumption. The same applies to illegal or illicit drugs,

² Fourth Amendment: E. Random Drug Testing—A public employer can only impose a random drug-testing program on its employees, absent individualized or reasonable suspicion, if the employee works in a safety sensitive position. Since firefighters are safety-sensitive employees, they may be subjected to random drug testing. For instance, in *Penny v. Kennedy*, the court relied on *Von Raab* and *Skinner* to conclude that a compelling interest exists to ensure that firefighters are free from drug impairments, and therefore, held a urinalysis without any suspicion of use is permissible. Likewise, in *Wilcher v. City of Wilmington*, a fire department began randomly testing firefighters and the firefighters claimed a Fourth Amendment violation. The court disagreed with the firefighters and upheld the testing under the Fourth Amendment.

controlled substances, legally prescribed medications, and alcohol in which the term “substance” will mean any of these unless it becomes necessary to distinguish between them. On these occasions, what is being discussed is specified, but the terms “use” and “substance” are broadly applied.

Additionally, departments use different labels for their substance-testing guidelines. The four main terms applied to identify substance testing were policy, directives, general orders, and administrative directives. As a result, the term “policy” is used throughout the thesis to refer to the differently named terms.

B. RESEARCH QUESTION

The research performed during this policy analysis looked at the substance testing policies of 12³ fire agencies to develop an understanding of where they converge and diverge, what they are designed to accomplish, where smart practices might exist, and what policy implications might be recommended for national implementation. The troubling and dangerous nature of substance use by firefighters is incompatible with their role in homeland security. Therefore, how different departments manage substance use is a first step in understanding the scale of the policy issue. In doing so, the following question is answered, what is the state of fire service substance testing policy nationwide, and what should it be?

C. METHOD

This thesis analyzed the substance policies of 12 U.S. fire departments: Washington, DC; Chicago; Seattle; New York City; Arlington County, Virginia; Austin, Texas; San Antonio, Texas; Boston; Los Angeles; Dallas; Atlanta; and Minneapolis. The “policies” comprised their respective standard operating procedures, general orders and policies, administrative directives, city policies and collective bargaining agreements, and any other documents that specify the purpose, expectation, procedures, and consequences of substance testing. The most relevant criteria and elements of substance testing and testing policies were drawn from the literature, located in the policies, and then a

³ Washington, DC; Chicago; Seattle; New York City; Arlington County, Virginia; Austin, Texas; San Antonio, Texas; Boston; Los Angeles; Dallas; Atlanta; and Minneapolis.

qualitative data analysis identified common characteristics, policy anomalies, and other salient patterns in the data set. From there, the successes, failures, and gaps in the policies were assessed, and policy recommendations were generated to correct and apply them nationally.

This inductive approach sought to establish a baseline level and type of substance testing policy in the fire service to determine: 1) how the fire service might develop a substance testing process to achieve uniformity and consistency to enhance current practices, 2) how to deter use among firefighters as a matter of personal and public safety, 3) what impedes substance policy implementation, and 4) how local laws, politics, and collective bargaining language affect substance testing policies in the fire service. It compared these agencies' policies against each other for a comprehensive and effective approach to substance testing and use mitigation.

Chapter IV discusses the criteria for the sample city selection, the process of source document collection, and the steps and rationale employed in this research.

D. OVERVIEW OF UPCOMING CHAPTERS

The Introduction outlines the parameters and goals of the project. Chapter II reviews all the salient literature on the topics and relevant theoretical frameworks underpinning this research. Chapter III moves beyond the literature to propose and explore four critical themes and criteria, which then shape the qualitative data analysis and coding phase. Chapter IV discusses the sample selection process, evidence, local laws, limitations, and biases of the project. Chapter V contains the coding of the data set, as well as an analysis and interpretation of the themes and patterns that emerged from the coding. Chapter VI synthesizes the significant findings into detailed policy recommendations for a national, standardized fire substance testing, and use mitigation policy.

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II. LITERATURE REVIEW

A. INTRODUCTION AND OVERVIEW

Studies on the phenomenon of addiction date back to the early 20th century and are constantly expanding and evolving as researchers continue to discover the molecular, neurological, physiological, and psychological effects of substances on the human body. Although a rich literature in the treatment of substance use, as well as in testing technologies and protocols, and privacy issues exists, researchers have not stopped probing for answers to questions, such as what causes a person to become addicted to substances, why does one person become addicted and not another, what treatment works best, and how long does it take to become addicted? Work continues in the many fields of study examining the use of substances and the human body's response to them.

Advances in use research are essential to human health and well being, especially when first responders are involved, particularly firefighters. Use has higher stakes when coupled with the occupational hazards of firefighting, law enforcement, and emergency medical services. Among researchers, the stressful nature of these occupations is well established. Stressors and the traumatic effects of stress are well documented and plentiful. However, no one stressor, trigger, or event is the same from person-to-person. The same can be said for substance testing across the fire service. Although pre-employment, post-incident, and reasonable suspicion substance testing exists, substance testing is not standardized in the fire service as it is in the armed services. Pivotal cases in the late 1980s, which caused widespread standardized testing of police officers across the United States, did not affect the fire service. Substance testing first responders is more in depth than an automatic policy adoption. Legal considerations, testing methods, and privacy matters must be vetted prior to implementation. The use of substances among firefighters has cascading public safety implications that could compromise their ability to fulfill their homeland security obligations to citizens who depend on them. This literature review explores four aspects of this complex matter: first responders and occupational stress, use, treatment, and privacy and testing.

B. FIRST RESPONDERS AND OCCUPATIONAL STRESS

An abundance of literature links first responders to high stress and to alcohol use. The pervasiveness of this correlation means first responders are susceptible to any psychological and physiological stressors that affect their ability to cope with circumstances that they might otherwise be able to manage. Police officers, firefighters, and emergency service personnel may be repeatedly exposed to situations involving fatal accidents, crime, child abuse, homicide, suicide, rape, and other traumatic events as part of their usual duties (Marmar et al., 2006, pp. 1–18). Exposure to these types of incidents not only causes stress but can also manifest as emotional exhaustion, strain, and injury. Feeling that emotional resources ordinarily devoted to work have diminished is characteristic of emotional exhaustion, a symptom of burnout, according to Maslach (1982). The exhaustion premise is further advanced by Jamal and Baba (1992, pp. 449–64), and Kandolin (1993, pp. 141–47) who, in 1992 and 1993, respectively, suggested that emotional exhaustion represents an important potential consequence related to shift work, as over time, the stress associated with shift work leads to strain. Halbesleben (2009) adds to this important literature by providing an integration, both theoretically and empirically, of the constructs of demands related to shift work: family support, work-family conflict, and emotional exhaustion (pp. 115–30). It is plausible that shift work plus strain from the types of emergencies firefighters respond to may trigger a higher prevalence rate of injuries. Although firefighters have a higher prevalence rate of certain knee, ankle, and back ailments or disabilities than office workers, no information is available to confirm they are at increased risk of these conditions, according to Bos, Mol, Visser, and Frings-Dresen (2004, pp. 373–82). Chen et al. (2007) explain the contradiction by postulating that firefighters are less likely than members of the larger population to seek social support, medical treatment, or psychotherapy (pp. 1289–97). Firefighters who do not seek support, treatment or therapy for job-related strain, emotional exhaustion and injuries, are at higher risk of developing stress related disorders.

According to McFarlane in 1998, epidemiological evidence links the relationship between posttraumatic stress disorder (PTSD) and alcohol abuse in emergency and law

enforcement personnel (pp. 813–25). In 2009, McFarlane, Williamson, and Barton (2009) posited that for particular occupations, such as police, fire, emergency service workers, and the military, exposure to traumatic events is an integral part of the workplace, in terms of prevention and management, PTSD is probably the single most important psychiatric condition arising in these occupational settings (pp. 311–27). The prevalence of PTSD, and avoidance of treatment, increases the odds that firefighters will seek relief in destructive ways. A 2010 study suggests that some firefighters with probable PTSD who responded to the World Trade Center may have increased their alcohol use as a form of self-medication (Berninger et al., 1177–85). These findings raise concerns about firefighter safety and vulnerability to substance use to deal with job stress.

In 1999, Murphy, Beaton, Pike and Johnson also confirmed the stressful nature of urban firefighting and the increased negative health outcomes, including post-trauma symptoms and overreliance on alcohol, which have implications for preventive and remedial interventions for fire departments, firefighters as individuals, and firefighting as a high-strain occupational group (pp. 179–96). Firefighters engage in both health-endangering and health-protective behaviors such as smoking, alcohol consumption, and exercise, respectively, along with demographic and organizational routines that are of social significance (Murphy, Bond, Beaton, Murphy, & Johnson, 2002, pp. 311–27). In 1999, Volpicelli, Balaraman, Hahn, Wallace, and Bux suggested that the link between exposure and drinking may be endorphin related. Their findings suggest that individuals who experience a traumatic event often experience a biochemical response of an endorphin release, which helps to numb the physical and emotional pain of the trauma; however, as the numbing effects of the endorphin release subside over time, individuals may experience withdrawal, and blunt the pain with alcohol (pp. 256–62).

C. ADDICTION AND ABUSE

Research indicates that various substances and activities of addition exist, such as cocaine and other psycho-stimulants, opiates, nicotine, alcohol, caffeine, and gambling. Studies of identical twins indicate that as much as half of an individual's risk of addiction to nicotine, alcohol, or other substances is genetics; determining the biological basis for

this risk is an important avenue of research (National Institute on Drug Abuse, 2008). Environmental influences, such as exposure to substances or stress, can alter both gene expression and gene function; in some cases, these effects may persist throughout a person's life—research suggests that genes can also influence how people respond to their environment, which places some individuals at higher risk than others (National Institute on Drug Abuse, 2008). The National Institute on Drug Abuse classifies addiction as a chronic, often recurring brain disease that causes compulsive substance seeking and use, despite harmful consequences to the addicted individuals and to those around them (National Institute on Drug Abuse, 2012). In 1999, Leshner asserts that addiction is not just a social problem or a moral failing on the part of addicts; however, an individual's life decisions do play major roles both in the initial choice to use substances and during the recovery process (pp. 22–25). In humans, relapse can occur after re-exposure to the substance, to cues associated with substance taking and substance seeking, and to stress (Self & Nestler, 1998, pp. 49–60).

Addiction can be operationally defined as the continued making of maladaptive choices, despite the expressed desire to make a different choice (American Psychiatric Association, 2000). In 2000, Goldstein (2000) found that addicts continue to pursue substances or other maladaptive behaviors despite terrible consequences. Addictive substances have been hypothesized to drive maladaptive decision-making through pharmacological interactions with neurophysiological mechanisms evolved for normal learning systems (Hyman, 2005, pp. 1414–22). In 2008, Redish, Jensen, and Johnson determined that addiction is a complex phenomenon, with causes that can be identified from many perspectives: social, environmental, legal, as well as psychological and neurobiological, economic, and genetic. All these perspectives explain the causes of addiction and provide suggested treatment methods (Redish, Jensen, & Johnson, 2008, pp. 415–87). Addiction costs the individual and society; whereas methamphetamine addiction is a terrible burden on society and demands extreme measures to prevent it; caffeine addiction barely troubles an individual or society (Redish et al., 2008, pp. 415–87).

Initially, substance use is voluntary, but prolonged use seems to “switch on” by compulsive substance seeking and use, despite devastating health and social consequences (Leshner, 1999, pp. 22–25). Leshner (1999) submits that virtually every addictive substance—be it cocaine, marijuana, methamphetamine, heroin, or nicotine—appears to increase levels of dopamine, a substance found in a brain area responsible for creating the sensation of pleasure (pp. 22–25). Brain scans have also revealed that prolonged substance use causes changes in brain function that continue long after the individual stops taking substances—significant effects of chronic substance use have been identified in the brain at all levels: molecular, cellular, structural, and functional (pp. 22–25). As the tight relationship between a cell’s chemistry and structure has become known, chronic exposure to substance use has been shown to alter the structure of neurons in reward circuits of the brain (Chao & Nestler, 2004, pp. 113–32). In 2005, Volkow suggests that another major risk factor for substance use is the presence of a mental disorder, which can be viewed in two ways, as a high prevalence of substance use in the mentally ill or as a high prevalence of mental disorders in substance users. Both suggest a common neurobiological basis for substance use and mental disorders (pp. 1401–02).

According to Goodale, in 2010, a White House study found a 400 percent jump in prescription drug use between 1998 and 2008. Experts blame a lack of monitoring programs, as well as Americans’ increasing unwillingness to bear even small pains (Goodale, 2010). Prescription drug abuse is the nation’s fastest-growing drug problem and has been classified as an epidemic by the CDCP (The White House, 2012). With such high rates, alternative views of addiction become relevant. The recognition of addiction’s complexity and the identification of central processes would help guide the development of prevention and treatment (Bickel & Yi, 2008). Viewing addiction as a chronic brain disease is a totally new concept for the general public, policy makers, and, sadly, many health-care professionals—but this concept should shape this nation’s policies; understanding addiction as a brain disease explains, in part, why policy strategies focusing only on the social or criminal justice aspects of substance use have been unsuccessful (Leshner, 1999, pp. 22–25). Major scientific advances have

revolutionized the understanding of substance use, and this new knowledge has the potential to reduce the United States' (U.S.) substance use burden significantly in the 21st century (Leshner, 1999, pp. 22–25).

D. TREATMENT

Long-established research has focused on evaluating treatment programs for substance use. Experts in the fields of general psychiatry, psychology, experimental psychology, and behavioral research have examined substance use treatment, treatment outcomes and effectiveness, and quantitative reviews since the 1970s (“Drug Abuse Treatment Outcomes Studies Background,” n.d.). According to the Substance Abuse and Mental Health Services Administration’s National Survey on Drug Use and Health, 23.5 million persons aged 12 or older needed treatment for substance use problem in 2009 (National Institute on Drug Abuse, 2011). The UXL Encyclopedia of Drugs and Addictive Substances identifies substances, as well as commonly abused classes of prescription and over-the-counter substances (GALE Cengage Learning, n.d). Simpson and Sells (1982) found that the most effective treatments nationwide were methadone, group therapy, and abstinence. All reduced substance use, criminality, and increased productivity (pp. 7–29). According to Hubbard, Simpson, and Woody in 2009, evaluation research has been crucial in establishing the credibility of a national network of substance treatment programs and in obtaining public funds for their support (pp. 153–65). Since problems mar interpretation of results, simple and straightforward pre-post data comparisons cannot be accepted as critical tests of treatment effects (Simpson & Sells, 1982, pp. 7–29). Simpson and Sells (1982) suggest the length of time necessary for baseline measurements is debatable; statistical biases appear in relatively dysfunctional pretreatment periods with more stable post treatment periods and the subsequent treatment episodes, as well as the therapeutic effects from family and other social influences that occur during the follow-up period (pp. 7–29).

In 1976, Cole and Watterson found that length of treatment did not correlate to effective outcomes among different treatments and among different programs within a given treatment (Cole & Watterson, 1976). The National Institute on Drug Abuse (NIDA)

contends that treatment effectiveness literature generally supports the value of motivational techniques, strengths-based counseling, behavioral therapy, and social support networking (National Institute on Drug Abuse, 1999). Employee assistance programs have provided value to employers, employees, and families for over four decades (National Business Group on Health, 2008, pp. 1–50). As determined by Wickizer, Kopjar, Franklin, and Joesch (2004), substance-free workplace intervention correlates with a statistically significant decrease in injury rates for three groups: construction, service, and manufacturing, with greatest impact on construction workers.

Although program effectiveness is not understood, a preliminary study contrasting faith-based and traditional substance use treatment programs suggests similarities. Faith-based programs emphasized religious belief, as well as substitution activities for cravings, but provided less structure and discipline (Neff, Shorkey, & Windsor, 2005, pp. 49–61). If substance use treatment works, then length of treatment and post treatment outcomes should be correlated; that is, the early dropouts with no interest in treatment and little motivation should predict failure (Simpson & Sells, 1982, pp. 7–29). In 2009, Hubbard, Simpson, and Woody suggested that future improvement of treatment is dependent on the partnership of researchers and real world providers, studies of evidence-based practice in a wide variety of community-based settings, and the consideration of complex and changing real-world environments, particularly for rural, uninsured and under-served populations (pp. 153–65). Treatment efficacy is high profile and a matter of social conscientiousness. For those trying not to use, it does not much matter how rehab services are improved—only that it happens in time (Carey, 2008).

E. PRIVACY AND TESTING

Although much available literature discusses workplace substance testing, conducting substance testing is not simply a matter of mandating that all employees schedule testing appointments—important matters must be considered well in advance: workers’ issues and rights, legal precedence, and ramifications and types of testing, to name a few. Typically, constitutional law challenges to substance testing are based on the Fourth, Fifth or Fourteenth Amendments: the Fourth Amendment states that no citizen

will be subjected to an unreasonable search by the government, the Fifth Amendment protects citizens from self-incrimination and guarantees that no citizen will be deprived of life, liberty or property without due process, and the Fourteenth Amendment states that every citizen must be provided equal protection under the law (Bryan, 1998, pp. 28–32). In 2011, Fish (2011) submitted that as substance use has become a nationwide problem, public employers, such as fire departments, are testing employees for substance use. While fire departments want substance-free employees, they must recognize the legal obstacles that limit their power to test for substances; as such, fire departments must only test employees for substance use in compliance with the Fourth Amendment.

Cholakis and Bruce (2007) point out that the parent substance or metabolite of a substance is typically present and detectable in traditional urine tests for only three to four days (pp. 31–36). Such a limited time would mean some use might go undetected. However, advanced forensic testing may expand the detection period for employees tested whether they are one-time, casual, or frequent users. Substance testing programs often have negative impacts on employee morale; it can be humiliating to be required to urinate in a bottle and they may think employers do not trust them (Lu & Kleiner, 2004, pp. 46–53). Lu and Kleiner (2004) establish that the legal considerations for public and private employers in the substance testing area are quite different; public employers have more hurdles than private employers because of the Fourth Amendment. Since the Fourth Amendment can only apply to government-required substance testing, private employers have more latitude to test than public employers do (pp. 46–53).

For public employees in a “safety sensitive” position, public employers can screen for substances only if they have a reasonable suspicion (Lu & Kleiner, 2004, pp. 46–53). A substance-testing program should be tailored to specific needs by evaluating all aspects—ranging from legal to convenience, such as collecting specimens, gender issues and privacy concerns—and must continually monitor results (Cholakis & Bruce, 2007, pp. 31–36). According to Bahls in 1998, unionized employers who need to obey the collective bargaining agreement have more hurdles than non-union employers do because they cannot unilaterally establish a random-testing program without notifying the union, or will be required to decide when testing employees is “reasonable” unless they have an

agreement with the union (pp. 104–16). However, private non-union employers may not have to prove that their substance testing programs are reasonable. Thus, private non-unionized employees have little legal standing to oppose the implementation of substance testing because they do not have the protections offered by a collective bargaining agreement (Lu & Kleiner, 2004, pp. 46–53).

In 1998, Leslie Bryan (1998) advanced that the U.S. Department of Labor (DOL) supports a five-part program: 1) a written substance use policy that defines company policy, rules, and procedures regarding substance use on the job and substance testing, 2) an employee education and awareness program that explains how substances affect work productivity, 3) supervisor training, 4) an employee assistance program (EAP), and 5) substance testing, as appropriate (pp. 8–32). The most common form of substance testing is pre-employment testing, which can generate information that can help prevent hiring a substance user (Lu & Kleiner, 2004, pp. 46–53). Pre-employment screening of job applicants for substance use is usually legal (Meiners, Ringleb, & Edwards, 1997, pp. 531–34). In 2004, Lu and Kleiner defined two types of random testing, discretionary random testing in which employers require employees to submit to a substance test at any time for good reason, bad reason, or no reason at all, and systematic random testing, which is the unannounced testing of a percentage of employees who have been selected randomly (pp. 46–53).

According to Meiners et al. in 1997, instances of reasonable cause substance testing because of “reasonable suspicion” of improper usage are most likely upheld when there is an announced policy of such tests and when safety is an issue (pp. 531–34). If no announced policy of such tests exists, Lu and Kleiner (2004) argue it might be unlawful for the company to require employees to submit to a test (pp. 46–53). They continue to suggest that periodic testing usually occurs in connection with an annual physical examination, which usually provide advance notice and courts have upheld this form of testing (pp. 46–53). Lu and Kleiner (2004) add that post-accident testing usually occurs after an industrial accident. This policy requires not only the perpetrator but also the victim to submit to substance tests and have been upheld because public safety issues generally outweigh the employee’s right to privacy and is probably the most defensible

form of testing without cause because the accident means that safety has been threatened (pp. 46–53). Regardless of the tool selected, Cholakakis and Bruce (2007) submit that a corporate managed substance-testing program is not a liability but a benefit that gives a company greater control over its future (pp. 31–36).

Since 10 to 15 percent of all American workers are estimated to be dependent on substances, the cost to American business takes numerous forms: absenteeism, high turnover rates, diminished productivity, work-site accidents, and increased health care costs (Drug Testing in the Workplace, 1988, pp. 5–6). Employers planning any kind of substance use testing programs should therefore be aware of potential legal problems (Drug Testing in the Workplace, 1988, pp. 5–6). Under the Drug Free Workplace Act of 1988, employers with government contracts or grants over \$25,000 must develop and publish a company policy prohibiting use, distribution or possession of substances; the act does not apply to alcohol (Bryan, 1998, pp. 28–32). The Americans With Disabilities Act (ADA) prohibits disability discrimination in the workplace with 15 or more employees (Bryan, 1998, pp. 28–32). A chemically dependent person may be protected as handicapped under federal and many state laws. Past substance use is considered a disability; a successfully rehabilitated alcoholic and/or substance user is protected from discrimination provided that user is not currently using substances (Drug Testing in the Workplace, 1988, pp. 5–6; Bryan, 1998, pp. 28–32).

DOT Rules (49 CFR Part 382) states that transportation workers who hold jobs that might affect public safety, must not use substances (Bryan, 1998, pp. 28–32). Correspondingly, 49 CFR Part 382.103(d)(3) permits a state, at its discretion, to exempt firefighters from federal substance testing requirements under certain circumstances and since firefighters are safety-sensitive employees, they may be subjected to random substance testing (“Code of Federal Regulations—Title 49,” 2010; Fish, 2011). The Comprehensive Drug Abuse, Prevention and Control Act of 1970 and Control Substances Act of 1994 contain regulations and criminal provisions for the manufacture, sale and use substances (Bryan, 1998, pp. 28–32). Guidelines for Federal Workplace Drug Testing establish mandatory technical guidelines for federal agencies that perform workplace substance testing, and establish a Department of Health and Human Services (DHHS)

certification program for laboratories that perform urinalysis (Bryan, 1998, pp. 28–32). Whom these regulations favor sets them apart from each other. For instance, DOT is designated for federal government testing whereas DHHS covers private sector testing in which the employer can determine if an occupation is safety sensitive. The DOT test panel tests for five classifications of drugs: amphetamines, cocaine, marijuana, opiates, and phencyclidine. When the government testing contrasts with private sector testing, the ADA steps in to protect employees with disabilities, whose past use of substance rehabilitation are considered against discrimination.

In March 1989, the U.S. Supreme Court issued two far-reaching decisions on substance testing in the workplace. *Skinner v. Railway Labor Executives Association* and *National Treasury Employees Union v. Von Raab* dealt with substance testing schemes for railroad and U.S. customs workers, respectively (Aalberts & Rubin, 1991, pp. 36–41). The implications of these cases appear to give certain employers, including those in the private sector, greater latitude in testing workers; employees, however, including union workers who thought they were contractually protected, may have legitimate concern that their privacy rights are eroding (Aalberts & Rubin, 1991, pp. 36–41). Three of the most controversial substance testing impediments have been whether testing should be permitted when no perceived or documented substance problem in the workplace exists, if the testing methods are reliable, and whether a non-negative test proves on-the-job impairment had occurred (Aalberts & Rubin, 1991, pp. 36–41). In these cases, the court found that substance-testing programs should be applied consistently and legally follow the state and federal law (Lu & Kleiner, 2004, pp. 46–53).

Although not all researchers agree on a single approach, solution, or rule in any of the sections comprised in this review, the continuing use of substances and the precipitous rise of prescription drug usage do cause experts universally to fault the lack of monitoring programs, as well as Americans' increasing unwillingness to bear even small pains (Goodale, 2010). Without studies, publications, and data from the fire service, speculation and assumptions will steer the subject. Data about firefighters using substances either do not exist or are not accessible, and therefore, cannot be used to comprehensively evaluate the extent of the problem in the fire service. Estimates of the

total overall costs of substance use in the United States, including productivity and health and crime-related costs exceed \$600 billion annually (National Institute on Drug Abuse, 2012). This number includes approximately \$193 billion for illicit drugs, \$193 billion for tobacco, and \$235 billion for alcohol (National Drug Intelligence Center, 2011; Centers for Disease Control and Prevention, 2008, pp. 1226–1228; Rehm, Mathers, Popova, Thavorncharoensap, Teerawattananon, & Patra, 2009, pp. 2223–2233). As staggering as these numbers are, they do not fully describe the breadth of destructive public health and safety implications of substance use, such as family disintegration, loss of employment, failure in school, domestic violence, and child abuse (National Institute on Drug Abuse, 2012). If usage among the general public is an indicator, chances are it is similar among firefighters. On the other hand, given the stresses a firefighter experiences, the usage might be even higher than among the general public. Therefore, an analysis of substance testing policies currently in use in the fire service is not only timely but also fitting.

III. CRITERIA / THEMES

This chapter introduces four necessary elements to classify a substance testing policy, and thus, criteria for the sample of policies that emerged from the literature. The categories are relevant to fire department substance testing policy but unique because no expert opinion exists specific to policy creation, design, and essence. Therefore, the criteria illustrate different considerations fire departments should give to implementing, evaluating, or revising their substance policy. The administrative and operational needs of a fire department and the financial, legal, logistical and procedural reliability associated with substance testing are factors that could prevent or promote widespread substance policy modifications across the fire service. Therefore, the four criteria that are the subject of this chapter are cost, legality, logistics, and technical reliability.

A. COST

Cost factors into every facet of public and private business. Substance testing of firefighters certainly has many associated costs, among them overhead, labor, equipment, program startup cost, supplies, lost time, legal, per unit/specimen, per person or flat rate, to name a few. Both because quantitative data are impossible to gather for many of these cost categories and because the values vary significantly by region, state, and agency, for the purposes of the present research, cost is discussed briefly in the abstract, and as two general categories, actual and insidious. It was not, however, one of the criteria or themes for which the policies were coded.

1. Actual Cost

Actual costs are rigid, unavoidable expenses that fire departments and testing laboratories must bear whether the laboratory is internal or external. Funds allotted for maintaining a substance-testing program are fundamental to the proper collection and analysis of urine, breath, and blood specimens. Conducting substance testing and operating a testing facility require dedicated monies to cover administrative costs. Someone or some unit must establish or have established procedures to follow as a guide

for processes and expectations. They must facilitate the selection of candidates to be tested, notify them, and coordinate arrangements for them to provide a specimen. Personnel fulfilling administrative roles must ensure collection sites are situated in accordance with regulations and arrange for the specimen to be collected (“Subpart D—Collection Sites, Forms, Equipment and Supplies Used in DOT Urine Collections,” n.d.). A paperwork trail must be created, which requires documenting the specimen void while maintaining chain of custody requirements to eliminate the possibility of tampering. Records management is an integral administrative process as well. Records of test results, contracts, and laboratory licensure and certification must be kept as proof that an entity is able and capable of performing forensic testing. Additionally, equipment must be calibrated to render accurate substance detection. These functions are some, not all, of the administrative tasks, all of which have personnel and budget requirements.

Expenditures occur for the technical aspect of substance testing as well. Technicians who perform collections and testing of body fluids and breath samples must maintain proper certifications to provide integrity to the process, apply and adhere to state and federal regulations and conduct the processes correctly to ensure that they are legally defensible if called upon to testify.

Equipment must be maintained. Evidential breath testing (EBT) devices and alcohol screening devices (ASD) on the National Highway Traffic Safety Administration’s (NHTSA) “conforming products lists” (CPL) for evidential and non-evidential devices are the only devices allowed for alcohol screening tests (“Subpart K—Testing Sites, Forms, Equipment and Supplies Used in Alcohol Testing,” 2001). Technicians are not only responsible for maintaining their qualifications but also must ensure the equipment that they use is maintained. Internal daily calibration, calibration prior to each test, and annual external calibration, is required for forensic breath testing equipment. Personnel time and technical support consultation are added expenses, in addition to shipping the device for the annual factory calibration as required. Laboratories have a technical support cost component factored into the operations. This support includes equipment maintenance, quality assurance, and recertification expenses. In addition, specimen collection certifications and licensures have mandatory affixed costs

that laboratories cannot neglect. Substance testing laboratories located in the United States are permitted to participate in DOT substance testing only if Health and Human Services (HHS) under the National Laboratory Certification Program (NLCP) certifies them for all testing (“Subpart F—Drug Testing Laboratories,” n.d.).

The national average per specimen testing cost ranges between a low of \$12 per drug test to a high of \$42; those costs (the specimen collection involves the greatest cost) vary around the country from as little as \$8 to as much as \$50, although the national average is likely about \$15 (“Cost of Drug Testing,” 2004). Nevertheless, generally speaking, it presents an affordable aspect for consideration in substance testing policy analysis and revision.

Against this equation are the costs of not having a substance-free workforce. Those costs to the employer cannot, perhaps, be measured in actual dollars per person. They are, however, measured in lost time, turnover/hiring/orientation, worker’s compensation injuries, damage to property of the employer, clients and vendors, immense liability overhead, cost of employee health insurance, Family Medical Leave Act (FMLA) absences and replacement workers and negative publicity. The latter factor can take on a life of its own; negative press never completely disappears, and costs an agency in tangible and intangible ways.

2. Insidious Cost

Insidious costs, on the other hand, are much more difficult to gauge. Environmental variables can influence the substance testing policy as significantly as actual cost but in a far less quantifiable or predictable manner. Policy processes and business practices, such as strategy, planning, and budgeting are explicit; whereas, the insidious costs of testing tend to be inconsistent and unpredictable. Insidious costs embed themselves in the factors related to size and geography, and do tend to be scalable. The more people an agency tests, the higher the probable cost; the further away from a lab or other required services an agency is located, the higher the probable cost.

The opinion of elected officials exacts a potential price or cost for a program. The political cost of substance testing can take one of three forms: support, derision, or

coercion. If a governing body senses value in the core mission and purpose of a fire department's substance testing policy, it provides funding through the budgeting process to cover the costs associated with executing the process. In doing so, this action symbolizes confidence elected officials have in the worth of a program designed to discourage substance use. Political costs can be levied if firefighters who have substances in their system are responsible for the death of or significant injury to another firefighter or to a civilian. The unwanted attention and liability that a substance related accident heaps upon a fire department could cause political leaders to question leadership's ability to maintain order in the organization. In the event that an elected official(s) chooses to scorn the actions publicly, it could cost the fire department the trust of the public. Fire departments could then be coerced into implementing a policy or making an existing policy stricter. The coercive cost of a fire department being forced to comply with the directives of their governing body creates friction between city leaders, fire chiefs, and firefighters. A substance related matter could cost more than just political relationships. Lives and careers can be ruined.

Environmental cost factors are related to substance testing policy language. "Environment" is used in this paper in a situational context to describe the costs substance use can introduce into the work atmosphere of a fire department. Violations of substance policy language jeopardize the trust among firefighters and other first responders. Substance use shatters confidence in both the individual using and the reaction of administrators, as well as of the public. Any mistrust created or perceived with policy enforcement sets firefighters in opposition against management for policing policy violations, and destroys trust amongst firefighters who work with a user. The fire service has a rooted culture of reliance and closeness. According to Aalberts and Rubin (1991), employees must grapple with the realization that all levels of government—legislative, executive and judicial—are pursuing public policy to purge substances from the workplace (pp. 36–41). Substance testing policy tensions disrupt the cohesive culture of fire stations and cost far more than the expense of applying the doctrine. Lu and Kleiner (2004) propose that substance-testing programs often decrease employees' morale; they may think employers do not trust them and may perceive that employers use

substance testing to know their off-duty conduct and intrude into their private lives (pp. 46–53).

Regional, local, and agency conditions that could have cost implications or affect substance testing methods are laws, political/socio-cultural, pricing of services, and individual fire departments. Marijuana has been legalized in a number of states. Although determined legal in those states, DOT continues to classify marijuana as an illegal, mind-altering substance, the use of which is not permitted in safety sensitive work. A regional issue that may possibly influence testing is the authorized use of substances for medicinal purposes; those considered prohibited according to policy language because they are known to be mind altering to the user and a safety issue to those working in safety sensitive positions. Fire departments in these regions may choose not to pursue a harsher policy direction over concerns of litigation, invasions of privacy and medical history infringement (Health Insurance Portability and Accountability Act of 1996 [HIPAA]) (“Health Information Privacy,” n.d.).⁴ Matters of this nature can cost a fire department in unique ways. It can postpone political backing, which delays financial support. It may possibly lead to lengthy proceedings from firefighters challenging testing because of invasions of privacy and rights. Not taking a more aggressive position on medicinal usage may draw unwanted media attention that could then cost fire departments the public’s trust.

Another regional issue is fire departments located in right-to-work versus fully unionized states. Employee and employment rights that clash with an employer’s lawful authority may impede enacting tougher policy language among fire departments nationwide, which could hamper standardization attempts. Larger sanctions, such as medical determinations, employee rights, privacy, and employment rules that officially permit certain behaviors add confusion to the policy process and discourage policy strategies. Local prices, availability, and type of services will vary depending on the

⁴ Health Insurance Portability and Accountability Act of 1996 (HIPAA): The HIPAA Privacy Rule provides federal protections for individually identifiable health information held by covered entities and their business associates and gives patients an array of rights with respect to that information. At the same time, the PRIVACY RULE is balanced so that it permits the disclosure of health information needed for patient care and other important purposes.

location of the fire department, but all factor well into the substance testing discussion. Larger metropolitan departments may not see these points as restrictive to policy adjustments. However, affordability and location will weigh heavily on more rural fire administrators' ability to afford policy adjustments. Finally, requiring supervisors to enforce stricter substance testing policies upsets the socio-cultural characteristics of individual fire departments that could damage the delicate but critical trust relationships between command and rank-and-file in this discipline.

Instances of substance problems can cause a fire department to lose the trust of the public. Launching a public image campaign is time-consuming and costly to navigate. Regaining media and public support after incidents of substance mishaps and gradually re-instilling trust, is difficult, and time-consuming. The cost of regaining public trust may pale in comparison to the cost of litigation and retesting if anything goes wrong in the testing process.

The donor of a specimen can challenge the results of a test, in which case a different certified lab must do the retesting of the original sample. Attorneys' fees will include defending the integrity of the collection and testing process. The expert testimony of a medical review officer (MRO) and perhaps a certifying scientist from the testing laboratory must be obtained, in addition to providing the specimen documentation that accompanies and tracks a sample through the entire process. All testimony in defense of the employer is borne by the employer.

Many of the costs mentioned so far are borne by the laboratory and not a fire department with the exception of public trust. Although fire departments pay for individual samples to be tested, laboratories experience higher costs associated with testing to maintain the required licensing and certifications. These costs are necessary for laboratories to conduct testing and would be expended whether testing fire departments specimens or not. Therefore, costs thought to be the responsibility of a requesting agency, which may deter an agency from implementing or altering their testing methods, may be lower than an agency might suspect. Thus, the cost of not having an effective properly and indiscriminately substance testing policy is far greater than the cost of a \$40 substance test.

B. LEGALITY—FEDERAL, STATE AND LOCAL

The legal intricacies of substance testing firefighters extend beyond the Fourth Amendment and safety-sensitive job provisions to actual testing methods and procedures. A number of regulatory documents or languages were mined from the department policies. Many were specific to the state in which a particular fire department was located. However, others were issued from national agencies or were national statutes. First, all the salient/applicable laws that all fire departments and other agencies are subject to were reviewed. This review yields the initial premise upon which substance testing is established according to federal mandates or as private employers dictate, which is necessary to gauge what regulatory language is available and to draw connections to the 12 policies analyzed. Next, the variances or agency specific regulations and laws were analyzed to further explore the similarities and inconsistencies in the policies as compared to the laws meant to guide them.

The judicial branch of the government oversees the regulatory aspects of substance testing. The DOT and the DHHS mutually regulate respective segments of the process. DOT standardizes the transportation side of testing and DHHS addresses the non-transportation facets. In the 1990s, DOT became the regulatory agent managing all components of substance testing for all transportation specialties, such as truck, rail, pipeline, Coast Guard, nuclear, and the Federal Aviation Administration (FAA). The NIDA, Substance Abuse and Mental Health Services Administration (SAMHSA), CFR 40, substance abuse professionals (SAPs) and breath alcohol technicians all fall under DOT mandates. DOT also mandates collection certifications. DHHS addresses matters related to the ADA and other non-transportation affairs. Then the DOL, the OSHA and the NIOSH overlap duties to reinforce DOT and DHHS missions.

The reason these central guidelines were randomly applied could not be determined through this policy analysis. What further complicates the legal aspect is that none of the department policies provides the actual language that they are using from the source authority, but only the index reference of the primary agency or act. For instance, the Arlington County Fire Department's policy mentions the employees in positions that require a commercial driver's license (CDL) are subject to the requirements of the U.S.

Department of Transportation's Federal Motor Carrier Safety Regulations (Arlington County Fire Department, Virginia, 2008). However, it does not give the language it requires its employees to be aware of, and as such, it is unclear which version of the language they are using in references. Many, if not all, of the referenced guidelines have several iterations, including amendments, spanning several years. It is unknown whether the version of the department policies provided for the analysis was updated each time changes or amendments were made. The following section explores the more frequently used governing procedures language for substance testing that appears across several sample policies. State penal codes and specific statutes are also discussed to demonstrate the gradations of departure in policy composition.

- 1. Department of Transportation (DOT), Code of Federal Regulations (CFR)—U.S. DOT Procedures for Transportation Workplace Drug and Alcohol Testing Programs (49 CFR Part 40)**

The Office of Drug and Alcohol Policy and Compliance advises the DOT Secretary on national substance testing and control issues and is the principal advisor to the Secretary on rules related to the substance testing of safety-sensitive transportation employees in aviation, trucking, railroads, mass transit, pipelines, and other transportation industries. The office publishes regulations and provides official interpretations on substance testing, including how to conduct tests, and the evaluation and treatment procedures necessary for returning employees to duty after testing violations. It also coordinates the department's involvement with the President's National Drug Control Strategy annually ("Overview," 2013). Since some fire departments require the drivers of their fire trucks to have and maintain a CDL, they must, therefore, abide by provisions set forth by the DOT.

DOT rule, 49 CFR Part 40, describes required procedures for conducting workplace substance testing for the federally regulated transportation industry ("Procedures for Transportation Workplace Drug and Alcohol Testing Programs, Overview of 49 CFR Part 40," n.d.).

DOT tests must be completely separate from non-DOT tests in all respects. In other words, DOT tests are for federal government testing

only to detect five specific chemicals whereas non-DOT is for private employers who can include other substances at will. DOT tests take priority and must be conducted and completed before a non-DOT test is begun. For example, any excess urine left over from a DOT test must be discarded and a separate void collected for the subsequent non-DOT test. (“Title 49—Transportation, Procedures for Transportation Workplace Drug and Alcohol Testing Programs—Part 40 Subpart B Section 40.13—How Do DOT and Alcohol Tests Relate to Non-DOT Tests?”, 2012a)

An employer may use a service agent to perform the tasks needed to comply with this part and DOT agency substance testing regulations. The employer remains responsible for compliance within its entity and with all applicable requirements for other DOT substance testing regulations, even when they use a service agent. If the employer violates this or other DOT substance testing regulations because a service agent has not provided services as these rules require, then a DOT agency can subject the employer to sanctions. Employer good faith use of a service agent is not a defense in an enforcement action initiated by a DOT agency in which there is alleged noncompliance with this provision or a DOT agency substance regulation may have resulted from the service agent’s conduct. (“Title 49—Transportation, Procedures for Transportation Workplace Drug and Alcohol Testing Programs—Part 40 subpart B section 40.15—May an Employer Use a Service Agent to Meet DOT Drug and Alcohol Testing Requirements?,” 2012b)

Only a medical doctor or DOT certified MRO is permitted to review and report substance testing results. Certification agencies are AAMRO (American Association of Medical Review Officers) and ACOEM (American College of Occupational & Environmental Medicine). ACOEM is the certifying board for occupational medicine physicians. Both agencies require course work and recertification every five years. The region of responsibility extends to Canada and Mexico, wherever an employee happens to be when a substance test is performed. Should a positive result occur, the employee is to stand down immediately, which may require parking a truck at roadside until a substitute driver is sent to continue the haul.

An employer who receives a verified positive substance test result must immediately remove the employee from performing safety-sensitive functions. This action must be taken upon receiving the initial report of the verified positive test result. The employer should not wait to receive the written report or the result of a split specimen test. For an alcohol test result of 0.04 or higher, the involved employee must immediately be removed from performing safety-sensitive functions. If an alcohol test

result of 0.02–0.039 is received, an employer must temporarily remove the employee involved from performing safety-sensitive functions, as provided in applicable DOT agency regulations, and must not wait to receive the written report of the result of the test. (“Title 49—Transportation, Procedures for Transportation Workplace Drug and Alcohol Testing Programs—Part 40 Subpart B Section 40.23—What Actions Do Employers Take After Receiving Verified Test Results?” 2012c)

Table 1 indicates the cutoff levels for initial and confirmatory substance tests performed using DOT’s protocol.

DOT Threshold Criteria for Testing			
Initial test analyte	Initial test cutoff concentration	Confirmatory test analyte	Confirmatory test cutoff concentration
Marijuana metabolites	50 ng/mL	THCA(1)	15 ng/mL
Cocaine metabolites	300 ng/mL	Benzoylcegonine	150 ng/mL
Opiate metabolites			
Codeine/Morphine(2)	2000 ng/mL	Codeine	2000 ng/mL
		Morphine	2000 ng/mL
6–Acetylmorphine	10 ng/mL	6–Acetylmorphine	10 ng/mL
Phencyclidine	25 ng/mL	Phencyclidine	25 ng/mL
Amphetamines(3)			
AMP/MAMP(4)	500 ng/mL	Amphetamine	250 ng/mL
		Methamphetamine(5)	250 ng/mL
MDMA(6)	500 ng/mL	MDMA	250 ng/mL
		MDA(7)	250 ng/mL
		MDEA(8)	250 ng/mL
(1) Delta-9-tetrahydrocannabinol-9-carboxylic acid (THCA). (2) Morphine is the target analyte for codeine/morphine testing. (3) Either a single initial test kit or multiple initial test kits may be used provided the single test kit detects each target analyte independently at the specified cutoff. (4) d-Methamphetamine is the target analyte for amphetamine/methamphetamine testing. (5) To be reported positive for methamphetamine, a specimen must also contain amphetamine at a concentration equal to or greater than 100 ng/mL. (6) Methylenedioxymethamphetamine (MDMA). (7) Methylenedioxyamphetamine (MDA). (8) Methylenedioxyethylamphetamine (MDEA).			

Table 1. DOT Threshold Criteria (from “Title 49—Transportation, Procedures for Transportation Workplace Drug and Alcohol Testing Programs, 2012d).

DOT language also explains chain of custody, time requirements, observation, consent, inspection, and laboratory and employee, employer, and agent responsibility procedures. When the MRO has notified an employee that they have a verified positive substance test and/or refusal to test because of adulteration or substitution, an employee has 72 hours from the time of notification to request a confirmatory retest of the original specimen. The request must be in writing and fully paid or authorization will not occur. If employees make this request to the MRO within 72 hours, they trigger the requirements for a retest of the split specimen. No split specimen testing occurs for an invalid result.

2. Department of Health and Human Services/Substance Abuse and Mental Health Services Administration (SAMHSA)

The DHHS recommends that each federal agency use the information contained in the collection site manual to ensure consistency and to improve the overall quality of the review process (U.S. Department of Health and Human Services, 2010).

The manual is for informational purposes only and can be modified to reflect the Federal Agency's Drug-Free Workplace Policy. This disclaimer may be interpreted as granting fire departments permission to design substance testing policies and programs as they see fit or according to their needs or capabilities. Thus, its language may very well be a contributor to the variations that were found in during the analysis. The Substance Abuse and Mental Health Services Administration (SAMHSA) within the U.S. Department of Health and Human Services (HHS) establishes the scientific and technical guidelines to be used by federal agencies, substance-testing facilities, and collection sites used for federally regulated workplace substance testing. SAMSHA developed the Collection Site Manual for Federal agencies' use in evaluating collection sites that provide specimen collection services to the Federal agencies, to verify and document compliance with Federal requirements. (U.S. Department of Health and Human Services, 2010)

The components of a substance-free workplace were discussed in the literature review chapter of this thesis.

The Collection Site Manual is designed to assist the Substance Program Coordinator or designee and Collection Site Personnel in evaluating collection site performance based on onsite inspections and self-evaluations. A Federal Agency is responsible for inspecting 5 percent (up to a maximum of 50) collection sites each year, selected randomly from

those sites used to collect Federal Agency specimens. They must investigate reported collection site deficiencies and take appropriate action, which may include an onsite inspection or collection site self-evaluation. The manual establishes what a collection site and a collector is as well as defining an adulterated specimen, chain of custody, Instrumented Initial Test Facility (IITF), laboratory, rejected for testing and substituted specimen. It also addresses conflicts of interest, tampering, initial and refresher training, collection site preparation, donor identification, time and quantity allowances, documentation and characteristics of the specimen. (U.S. Department of Health and Human Services, 2010)

Detailed instructions are provided for collectors to request the donor read, sign, and date the donor statement certifying that the specimen identified was collected. The observer must never touch or handle the collection container unless the observer is also serving as the collector. The observer must maintain visual contact with the collection container until the donor hands the container to the collector. The temperature-measuring device must accurately reflect the temperature of the specimen and not contaminate the specimen. Forensic testing and documentation will be part of the litigation package if a specimen comes under legal challenge. As of October 1, 2010, DOT ruled that collectors must be certified. The program offered by Drug and Alcohol Testing Industry Association (DATIA) is the primary certification agency. It is costly. Initial certification is in excess of \$500 per collector and does not include travel. The manual must be purchased, and an eight-hour online test is required, in addition to five mock collections demonstrated to the trainer.

An executive order issued by President Ronald Reagan put forth that the federal government, as the largest employer in the nation, can and should show the way towards achieving substance-free workplaces through a program designed to offer substance users a helping hand and, at the same time, demonstrating to substance users and potential substance users that substances will not be tolerated in the federal workplace (Executive Order No. 12564, 1986). According to the order, substance use “is having serious adverse effects upon a significant proportion of the national work force and results in billions of dollars of lost productivity each year” (Executive Order No. 12564, 1986). The use of substances, on or off duty, by federal employees in certain positions undermines the

complete reliability, stability, and good judgment consistent with access to sensitive information and creates the possibility of coercion, influence, and irresponsible action under pressure that may pose a serious risk to national security, the public safety, and the effective enforcement of the law.

Federal employees—in fact all employees—who use substances must themselves be primarily responsible for changing their behavior and, if necessary, begin the process of rehabilitating themselves (Executive Order No. 12564, 1986). The stance put forth in the executive order laid the foundation for the DHHS to draft language to guide in the collection of substance testing specimens. It also put the onus of responsibility squarely on the individual to seek rehabilitative assistance. The matter drew the attention of the White House in 1986, and more than two decades later, national security, public safety, and effective law enforcement are still grappling with this matter.

3. Americans with Disabilities Act of 1990

The ADA is one of America's most comprehensive pieces of civil rights legislation that prohibits discrimination and guarantees that people with disabilities have the same opportunities as everyone else to participate in the mainstream of American life—to enjoy employment opportunities, to purchase goods and services, and to participate in state and local government programs and services (“Introduction to the ADA,” n.d.).

Modeled after the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, religion, sex, or national origin – and Section 504 of the Rehabilitation Act of 1973—the ADA is an “equal opportunity” law for people with disabilities. To be protected by the ADA, one must have a disability, which is defined by the ADA as a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such impairment, or a person who is perceived by others as having such impairment. The ADA does not specifically name all of the impairments that are covered. (“Introduction to the ADA,” n.d.)

Alcoholism is covered under ADA as a disability; Use of mind-altering substances is not. (“Sharing the Dream: Is the ADA Accommodating All?,” n.d.)

Language referencing the Department of Justice's ADA was found in some of the fire department policies during the analysis.

The ADA provides a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities. It gives clear, strong, consistent, enforceable standards addressing discrimination against individuals with disabilities to ensure that the Federal Government plays a central role in enforcing the standards established individuals with disabilities. The ADA invokes the sweep of congressional authority, including the power to enforce the fourteenth amendment and to regulate commerce, in order to address the major areas of discrimination faced day-to-day by people with disabilities. ("Title 42—The Public Health and Welfare, Chapter 126—Equal Opportunity for Individuals with Disabilities: Section 12101—Findings and Purpose, Americans with Disabilities Act of 1990," n.d.a.)

The term "qualified individual with a disability" shall not include any employee or applicant who is currently engaging in the use of substances, when the covered entity acts on the basis of such use. Nothing shall be construed to exclude as a qualified individual with a disability an individual who has successfully completed a supervised substance rehabilitation program and is no longer engaging in the use of substances, or has otherwise been rehabilitated successfully and is no longer engaging in such use; is participating in a supervised rehabilitation program and is no longer engaging in such use; or is erroneously regarded as engaging in such use, but is not engaging in such use; except that it shall not be a violation of this chapter for a covered entity to adopt or administer reasonable policies or procedures, including but not limited to substance testing, designed to ensure that an individual is no longer engaging in the use of substances. ("Sharing the Dream: Is the ADA Accommodating All?," n.d.)

A covered entity may prohibit use of substances at the workplace by all employees. They may require that employees shall not be under the influence of alcohol or be engaging in the use of substances at the workplace and may require that employees behave in conformance with the requirements established under the Drug-Free Workplace Act of 1988 (41 U.S.C. 701 et seq.). The entity may hold an employee who engages in the use of substances or who is an alcoholic to the same qualification standards for employment or job performance and behavior that such entity holds other employees, even if any unsatisfactory performance or behavior is related to the substance use of such employee. They may also, with respect to Federal regulations regarding alcohol and the use of substances, require that employees comply with the standards established in such regulations of the Department of Defense, if the employees of the

covered entity are employed in an industry subject to such regulations, including complying with regulations (if any) that apply to employment in sensitive positions in such an industry, in the case of employees of the covered entity who are employed in such positions (as defined in the regulations of the Department of Defense). (“Title 42—The Public Health and Welfare, Chapter 126—Equal Opportunity for Individuals with Disabilities: Section 12114—Illegal Use of Drugs and Alcohol, Americans with Disabilities Act of 1990,” n.d.b.)

A test to determine the use of substances shall not be considered a medical examination. None of the language shall be construed to encourage, prohibit, or authorize the conducting of substance testing for the use of substances by job applicants or employees or making employment decisions based on such test results. Nor shall it be construed to encourage, prohibit, restrict, or authorize the otherwise lawful exercise by entities subject to the jurisdiction of the Department of Transportation of authority to test employees of such entities in, and applicants for, positions involving safety-sensitive duties for the use of substances and for on-duty impairment by alcohol; and remove such persons who test positive for use of substances and on-duty impairment by alcohol from safety-sensitive duties. (“Title 42—The Public Health and Welfare. Chapter 126—Equal Opportunity for Individuals with Disabilities: Section 12114—Illegal Use of Drugs and Alcohol (D) Drug Testing, Americans with Disabilities Act of 1990,” n.d.c.)

4. Drug-Free Workplace Act of 1988 U.S. Code Title 41—Public Contracts

The Department of Labor plays a role in substance testing also. It maintains the language contained in the Drug-Free Workplace Act of 1988. The Drug-Free Workplace Act of 1988 requires *some* federal contractors and *all* federal grantees to agree to providing substance-free workplaces as a condition of receiving a contract or grant from a federal agency (Drug-Free Workplace Act of 1988, 2008). The act does not apply to those who do not have, nor intend to apply for, contracts/grants from the federal government; nor does it apply to subcontractors or sub-grantees (Drug-Free Workplace Act of 1988, 2008).

Because the Act applies to each contract or grant on a case-by-case basis, an agency will need to determine coverage for each federal contract or grant they have, or for which they are applying. If a company has a grant that is covered under the Act and a contract that is not, the Act does not cover the entire company—only employees working on the covered grant

must comply. Although an agency may not be required to provide a substance-free workplace for all your employees, they may find it cost-effective to do so—and a good way to protect their workers and business profits. (Drug-Free Workplace Act of 1988, 2008)

In furtherance of that protection, employers must publish and give a policy statement to all covered employees informing them that the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited in the covered workplace and specifying the actions to be taken against employees who violate the policy (“Drug-Free Workplace Act of 1988, Requirements for Organizations,” n.d.b.).

The employer’s policy statement should be clear about which employees are covered by the policy. For example, will the policy apply to all employees or only to those covered by Act. The employer must make it a requirement that every employee who is engaged in the performance of the covered contract or grant be given a copy of the policy statement. Some employers may choose to have each employee sign a statement acknowledging receipt of the policy. Although this is not specifically required by the Act, it would provide evidence that each employee was given a copy of the policy and that the organization was making a good faith effort to comply with the provisions of the Act. (“Drug-Free Workplace Act of 1988. Publish and Give a Policy Statement,” n.d.a.)

The policy statement should specify what substances are prohibited. The Act only requires that the policy address controlled substances. Although the Act does not require the inclusion of alcohol or prescription drugs in the policy, many companies choose to include provisions in their policies that prohibit on-the-job substance use; such a statement is strongly advised. Such a provision should be made in accordance with State and local law. A provision of this nature would account for the inclusion or supplementary use of State and local statutes in the substance policies that were reviewed, which would explain the deviations that were detected in the policies. (“Drug-Free Workplace Act of 1988. Publish and Give a Policy Statement,” n.d.a.)

The policy statement must also be clear about the consequences of violating the policy, as well as the process for determining what actions may be taken in response to a violation. The permitted actions include either referral to treatment or appropriate disciplinary action. Regardless of which action an employer chooses, the response should be applied consistently and fairly. (“Drug-Free Workplace Act of 1988. Publish and Give a Policy Statement,” n.d.a.)

Although each case is unique, it is in the employers' best interest, particularly legally, to treat similar offenses with similar consequences to avoid a discrimination contest or an Equal Employment Opportunity Commission (EEOC) complaint. Many employers provide an employee with the opportunity to seek treatment before initiating disciplinary action. A one-time session of rehabilitation allowance is written into the DOT regulation. However, it does not specify how many chances should be given, which apparently then assigns the decision to the applying agency. Most employers follow the DOT regulations as being the gold standard for all matters pertaining to substance free workplace policies.

5. Title 21 United States Code (USC) Controlled Substances Act

It appears that for many agencies, the Controlled Substances Act and the United States Code are synonymous and used interchangeably. During the analysis, the policies that referenced either of them did so without clarifying the connection between them. The language for act and the title are issued from the Department of Justice's Drug Enforcement Administration's (DEA) Office of Diversion Control.

Under subchapter I: Control and Enforcement—Section 802—substance and paraphernalia definitions are covered and the five schedules of drugs are established, which were often referenced in some of the department policies but not all of them. The Chemical Control Program works with domestic and international partners to target drug and chemical trafficking organizations most responsible for the production, distribution, and diversion of precursor chemicals. DEA's strategy is to deny precursor chemicals—raw products and chemicals—to drug trafficking organizations and, at the same time, to ensure an adequate supply for commercial licit markets. ("Chemical Control Program," n.d.)

Over 770,000 manufactures, distributes, pharmacies, and other handlers of controlled substances are registered with DEA. The vast majority of this group complies with controlled substances laws and regulations in a responsible and law-abiding manner, and has self-regulation programs consistent with the highest standards. DEA relies upon these programs and concentrates its resources on the more serious problems of both practitioner and non-practitioner diversion. Handlers of controlled substances must be aware of the various diversion methods, which include illegal sale, falsified prescription orders, burglary, employee theft, loss in-transit, robbery, and customer/patient theft. However, willful and

intentional diversion by manufacturers, distributors and dispensers is another source of diversion. (“Controlled Substances Security Manual,” n.d.)

A critical first step in diversion prevention is employee screening; concern with personnel security must start before and employee is hired. Pre-employment screening to identify potential security problems is important when choosing new employees to work in or around areas where controlled substances are handled. The screening program should include a careful evaluation of the applicant’s personal and previous employment references. Criminal background checks with local law enforcement authorities and with DEA are equally important. Similar precautionary measures should be taken before transferring established employees to new jobs in areas where controlled substances are manufactured, processed, stored, shipped, dispensed, or handled in any way. (“Controlled Substances Security Manual,” n.d.)

The legal language used to guide substance testing should be designed with the maximum effectiveness captured in the language. Substance testing consists of three vital components: collections, the laboratory, and the MRO. Collections involve the most human involvement and concerns for complications. Although regulations establish how substance testing should be done, humans both create and complicate the process. The recent mandated certification of collectors and collection sites has aided in significant reduction of collector errors. The laboratory falls under the DOT and has built in quality assurances to ensure the chemistry is dependable. The last component is the MRO. The MRO is governed by the DOT also and is the final say on a result. The MROs verify the integrity of the chain of custody, guarantee the validity of the process, and are the only people who can declare a test positive or non-negative.

C. LOGISTICS

Logistics can be individualized for what works best for the agency. Fire departments in major metropolitan areas may have an advantage in making logistical arrangements over rural agencies. Smaller and rural fire departments may have to make more of an effort to have their firefighters’ specimens tested. Availability of testing facilities can play a vital role in facilitating this task. Testing facilities have access to databases that they can share with smaller or more remote fire departments. These

databases list testing facilities authorized and capable of conducting forensic toxicological sampling, which may be more easily accessed rather than traveling great distances for the procedure to be done. Courier services are also available for use in transporting specimens to certified testing facilities, and thus, making it possible for all fire departments to engage in substance testing of their firefighters. FEDEX permits shipping of bio-hazardous materials in proper containers/packaging.

To tailor the logistics of substance testing, four points should be stressed and addressed: establishing policies and protocols, communicating the reason for testing, setting up testing standards, and handling the results.

1. Communicating Protocols and Conducting Testing

Policies and protocols are mandatory to inform, advise, and protect those associated with substance testing. It is imperative that fire departments not only have policies that define what their firefighters can expect during testing but also the behaviors that will prompt it. The substances for which employees are tested will differ from agency to agency as is apparent with the fire departments used in the analysis. In developing a substance testing policy, the Department of Labor through the Drug-Free Workplace Act of 1988, instructs agencies to develop a method of informing all employees of the program and its intricacies (“Drug-Free Workplace Act of 1988. Requirements for Organizations,” n.d.b.). This point works in management’s favor when an employee attempts to use lack of knowledge or ignorance of the policy as a defense, if they become the subject of a non-negative result. By being completely transparent, policy language thus reduces questions and uncertainty surrounding testing within an agency. Furtherance of the policy lays in the supporting regulations used to compose the doctrine. It is important to spell out who, what, when, where, why, and how substance testing will be done along with the preferred method of selecting individuals to provide a sample and the collection process.

2. Testing Method and Collection

The method of testing that a fire department uses steers many of the logistical requirements. Whether an agency is engaged in conducting pre-placement, random,

reasonable suspicion, post-accident, or return to duty as their method of deterring or detecting substance use, it has logistical obligations to manage. The selection of employees for pre-placement (after a conditional offer of employment is made) or testing of active employees must be generated by some entity either internally or externally. The method used to select them must be defined in policy and the process arranged. Within the policies reviewed, computer-generated selection of employees for random testing was done by a third party completely separate from the fire department; this arrangement must be procured in advance. The number of firefighters to be tested is essential to the continuous emergency response capabilities, which is less of a concern when using the types of testing that only require one or a few firefighters be out of service at a time as opposed to the random testing of groups or units. Logistically, a predetermined percentage of randomized employees should be defined in the substance testing policy. An example of record is the DOT 49 CFR Part 40, which regulates the randomization of each of the five branches of the DOT. The one most familiar and held up as standard is over-the-road truckers. This group is randomized at 50 percent per annum for urine drug testing and 12.5 percent for alcohol testing. Response coverage thus becomes a logistical matter requiring attention, which each agency will manage according to its service demand and apparatus deployment strategy.

The location where the collection of the specimen will be taken also has to be established in advance and communicated. When a firefighter is notified of a required urinalysis, is where it will be done and what is expected known? The collection location must be identified, approved, and prepared for collection. Collecting can occur at an on- or off-site location; it must meet industry standards, and provide the donor with the required privacy to maintain dignity in addition to maintaining the integrity and security of the forensic chain of custody. In a non-clinical setting in which forensic collection is part of daily business, the facility used must be secured in advance, access to water disabled, or prepared with a coloring agent to prevent the addition of supplemental water to a specimen. Toilet tanks are taped with forensic evidence tape, and faucets are disabled or taped; only the collector and the donor of the required specimen are permitted to be present in the immediate collection area or within hearing or observation possibility. It is

the responsibility of the certified collector to secure the collection area. For fire departments, the collection is not observed and must be conducted by a same sex individual as the person providing the specimen, which also requires prearrangement. In cases where shift work is a complicating factor, the convenience of on-shift collection is an option that can be arranged through internal processes or negotiated with outside collectors; especially when events occur outside of normal business hours, testing clinic-operating hours, or after hours.

The person, agency, or unit collecting specimens deserves attention. Is the collection agent an internal or external person or unit? Having an internal person or unit conduct this process may open an organization up for litigation. Federal and state law prohibit employers, supervisors, dispatchers or anyone who has the designation of being able to hire, fire, supervise, direct the activities of an employee, from collection of forensic specimens. Utilizing a third party to perform this task clears the parent agency of bias and conflicts of interest associated with questioning not only how the specimen was collected but also why; and if discrimination, coercion, intimidation, and abuse of power were involved. Any third-party collecting agent should provide current and proper certification and accreditation to perform the task(s), which requires ensuring the external agent is certified and capable of conducting specimen testing and complying with current mandated rules, both state and federal. Once a firefighter is identified as needing a reasonable suspicion or post-accident test is notified, and provides a specimen, the firefighter's disposition must be considered while awaiting test results that may include being placed on administrative leave with or without pay as is appropriate, or returning them to work, which is logistically and operationally more feasible given that a replacement firefighter will have to be brought in to cover any absences. Returning a firefighter to duty could open a fire department up to liability should the tested firefighter be involved in a mishap and substances are found in their system. To detect substances in the system, breath, blood, or saliva may be tested for alcohol; urine must be tested for substances.

3. Privacy, Chain of Custody and Testing

The efficacy of how collections are performed is where the greatest emphasis is given to donor anonymity and the validity and integrity of the chain of custody. Blood, breath, and saliva have equal values for measuring alcohol concentration and are the only legally defensible methods to detect alcohol. Using urine for alcohol is not defensible because sugar ferments to alcohol in the urine of pre-diabetics and diabetics; thus, a false urine alcohol finding could occur. Additionally, all persons do not have the same bladder capacity and may void only once or twice a day. In testing urine for alcohol, the test result has the potential to yield a higher concentration of alcohol due to the fact of concentration and infrequent expelling of urine. Thus, urine is only used in the detection of substances that linger or have lasting effects.

A certified breath alcohol technician (BAT), acting under the collection agency's authority, is the only person who can legitimately perform breath alcohol or saliva alcohol testing to detect concentrations of alcohol. Breath and saliva testing are portable and can be done at the employer location with an instant result. The DOT permits breath and saliva testing for alcohol as they are non-invasive methods of collecting a sample. Collectors of breath and saliva must be certified to use the equipment and generate a proper result. Blood alcohol requires a venipuncture. Breath and saliva is a collection site only process. Blood is drawn and sent to the lab for analysis. These and other directives and guidelines are found in DOT language. Having a clinic that has certified collectors who follow these and other mandated protocols, which those operating under the DOT are required to do, makes searching for and using certain facilities a logistical priority. The use of a non-certified collection agent leaves room for doubt in the validity of the testing.

Concealing the identity of specimen donors requires having trust in those assigned to perform this task. Trust is further extended to the preparatory phase of specimen collection in and around where specimens are collected. The collection site must meet required standards and be readied for collection. The forensic chain of custody begins at this point, and without it, human error and uncertainty is introduced. The collector must have the appropriate credentials, forms, containers and expertise to become an approved

specimen collector. Certified collectors are required to have biennial recertification, which includes passing a written test and performing five mock collections in the presence of a certified collector trainer.

If the donor is required to meet the collector off-site, transportation must be provided. For on-site collection, the same applies but with emergency response operational considerations to be addressed. In either case, the transporting of the person and/or the specimen is in continuance of the chain of custody. The selection of a facility to test specimens is logistically integral and necessary and often out of the control of the agency needing specimen testing.

Once the specimen has been tested, results are disseminated via electronic transmission to the MRO. Following the MRO review process and declaration of result, the result is made available to the fire department designated Human Resources (HR) officer. The results must remain confidential. Negative results do not prompt untoward action. However, the receipt of a confirmed non-negative result does. After which, the disposition of a firefighter must be taken into consideration.

4. Handling Results and Employee Disposition

The person who handles test results, confidentially, the disposition of an employee, and follow-up actions by the agency, must be established and published in advance of laboratory services being obtained. State and federal regulations require that a substance testing policy be in place and all personnel and new hire candidates must be given a copy of the policy and have the opportunity to ask questions about it prior to the implementation of said policy. Once the MRO confirms the test results, the requesting agency is notified. The individual(s) who receives the results must be trustworthy and able to maintain confidences. Results are only released to someone authorized as an agency's designee(s), and no other. Having received a non-negative substance test result, an agency must consider the disposition the firefighter. Removing the firefighter from a regular work schedule and placing said person in other than an active status has to be decided. In doing so, forethought must be given to covering the position left vacant by the absence using overtime or reassigning personnel. In both cases, managers must make

adjustments despite costs or inconveniences. After the person has been removed from the work environment, deciding what will ultimately happen is the next priority. Procedures and regulations must be followed for both rehabilitation and discipline.

In cases where rehabilitation is utilized, the involvement of a qualified Substance SAP and EAP is essential. According to DOT regulation—49 CFR Part 40, the (SAP is a licensed physician or certified and licensed substance abuse professional who evaluates employees who have been determined to have used substances in violation of company policy (U.S. Department of Transportation, Office of Drug and Alcohol Policy and Compliance, 2009). The evaluator makes recommendations concerning education, treatment, follow-up testing, and aftercare (U.S. Department of Transportation, Office of Drug and Alcohol Policy and Compliance, 2009). To be a SAP, the individual must have certain education, licensing, and credentials. Continuing education, annual qualification for licensure criteria must be met (U.S. Department of Transportation, Office of Drug and Alcohol Policy and Compliance, 2009). The SAP advocates for neither the employer nor the employee (Substance Abuse Professionals, n.d.). SAPs are instrumental in the critical early stages of obtaining the rehabilitative help a firefighter needs. Help from EAP professionals can also be pursued; however, the SAP is the only person actually qualified to make a determination of untoward use, and perhaps, dependence upon substances. If treatment is necessary, it is done at the firefighter's expense using health and earned leave benefits. Each of these measures takes arranging, and privacy must be preserved.

When discipline is used, someone must be designated to handle those responsibilities as well, and must be versed in due process, local ordinances and regulations, collective bargaining language, and the disciplinary history of the firefighter involved. The history will establish the next step to take—termination. If it is determined that terminating a firefighter is necessary, union representatives (in states with unions) must be involved in the process. Neglecting to allow union representation participation could cause a fire department to face legal actions. It is worth noting that in certain instances where substance use is factor in the termination of an employee, the employee may claim protection under the American's with Disabilities Act (ADA). Alcoholism is protected under ADA. Use of substances is not. The ADA provides that any employee or

job applicant “currently engaging” in the use of substances is not a “qualified individual with a disability.”⁵ Therefore, an employee who uses substances—whether the employee is a casual user or an addict—is not protected by the ADA if the employer acts because of substance use.⁶ As a result, an employer does not violate the ADA by uniformly enforcing its rules prohibiting employees from using substances.⁷ However, “qualified individuals” under the ADA include those individuals who have been successfully rehabilitated and who are no longer engaged in the use of substances,⁸ who are currently participating in a rehabilitation program and are no longer engaging in the use of substances,⁹ and who are regarded, erroneously, as using substances (Substance Abuse

⁵ 42 U.S.C. § 12114(a) (1994); 29 C.F.R. § 1630.3(a) (1999). See, e.g., *Shafer v. Preston Mem’l Hosp. Corp.*, 107 F.3d 274 (4th Cir. 1997) (current illegal drug user is not covered). Ellen Weber, director of the national office of the Legal Action Center, a law and policy office that specializes in alcohol, drug, and AIDS issues, said in her testimony before the Commission that prior to passage of the ADA, individuals with current drug problems were protected under the Rehabilitation Act against discrimination to the extent they could perform their jobs. “[The] decision to eliminate coverage,” Ms. Weber testified, “was based on nothing other than the pure political decision that nobody wanted to appear soft on drugs...” Ellen Weber, testimony before the U.S. Commission on Civil Rights, hearing, Washington, DC, November 12–13, 1998, transcript, p. 25 (hereafter cited as *Hearing Transcript*). Ms. Weber argued that this change in the law “did nothing more than...deter some individuals from getting into treatment and driving the problem underground in an effort to hide that problem from an employer,” pp. 25–26.

⁶ Under the ADA, “illegal use” is broader than just the use of drugs commonly viewed as illegal. It includes the use of illegal drugs that are controlled substances (e.g., cocaine), as well as the illegal use of prescription drugs that are controlled substances (e.g., Valium). For example, in *Nielsen v. Moroni Feed Co.*, 162 F.3d 604, 611, fn. 12 (10th Cir. 1998), the court stated there “is no doubt that, under the ADA, illegal drug use includes the illegal misuse of pain-killing drugs which are controlled by prescription as well as illegal street drugs like cocaine.”

⁷ EEOC Technical Assistance Manual on the ADA § 8.3. See, e.g., *Wood v. Indianapolis Power & Light*, 2000 U.S. App. LEXIS 1769 (7th Cir. 2000), No. 99-1652 (meter reader who tested positive for cocaine and marijuana use was not protected by the ADA).

⁸ 42 U.S.C. § 12114(b) (1994).

⁹ 42 U.S.C. § 12114(b) (1994). A “rehabilitation program” may include inpatient, outpatient, or EAPs, or recognized self-help programs, such as Narcotics Anonymous. EEOC Technical Assistance Manual on the ADA § 8.5.

under the ADA, n.d.).¹⁰ Administering the discipline process is complex and deserving of thorough attention from the person charged with overseeing it.

The logistic points emphasized in this chapter are weighty. For departments implementing new policy or updating existing policy, these and other arrangements related to substance testing of firefighters requires a great deal of preplanning and detailing. The more thorough an agency is in the strategic design of its program and all of its intricate components, the more able it is to educate, organize, execute, and manage processing firefighters through substance testing processes.

D. TECHNICAL RELIABILITY

Advancements in substance testing have taken the field from roadside breath tests and immuno-assay test kits to technologically sophisticated, forensic laboratory methods. False positives and inaccuracies linked to earlier types of testing stigmatized the testing industry. Doubts have all but disappeared with the advent of processes that provide molecular fingerprinting of substances and regulations that mandate certifications and quality assurances. Methods in use today have reduced questionable test results. The confirmation test known as gas chromatography/mass spectrometry (GC/MS) is extremely accurate and is the only confirmatory method authorized under federal drug testing procedures—it is the gold standard of forensic testing (“Lab Based Urine Drug Testing: Still the Gold Standard,” n.d.). Re-confirmation testing has stood up to extensive legal challenge. Once the collection of a specimen has taken place and if the specimen has not been compromised through improper chain of custody procedures, the forensic, scientific, and technical aptitude become central in the detection of prohibited substances. Only about a dozen companies nationwide with laboratories perform SAMSHA- certified and regulated forensic substance testing. Broadly speaking, this limited number of

¹⁰ See *Ackridge v. Dep’t of Human Servs., City of Philadelphia*, 3 AD Cases (BNA) 575, 576 (E.D. Pa. 1994), in which the plaintiff claimed that she was discriminated against because she was incorrectly regarded as an alcoholic and/or a substance abuser. In dicta, the court noted that if the plaintiff was in fact regarded as a drug abuser (and if she was not using drugs), or if she was regarded as an alcoholic, she might have a valid ADA claim. *Id.* at 576. See also EEOC Technical Assistance Manual on the ADA, which states, “tests for illegal use of drugs also may reveal the presence of lawfully-used drugs. If a person is excluded from a job because the employer erroneously ‘regarded’ him/her to be an addict currently using drugs illegally when a drug test revealed the presence of a lawfully prescribed drug, the employer would be liable under the ADA.” *Ibid.* at § 8.9.

laboratory companies is the first in a series of measures that increase the technical reliability of contemporary substances testing. Individual laboratories are then tasked with maintaining the integrity of the testing process through a series of steps with quality assurance assessments built in to reinforce precision.

At the point of collection, each specimen is identified and labeled with two unique numbers, the chain of custody form number and the donor identification number (generally using the social security number as mandated by the DOT). The chain of custody form contains sticker labels for each of the bottles that bear the number of that specific chain document. Bottles are labeled and sealed with the stickers and are initialed and dated by the donor of the specimen to ensure that the donor knows the specimen is secure. Specimens are placed into a bag in the donor's presence. The collector then seals the bag with a label from the chain of custody form also initialed and dated by the donor. The laboratory copies of the chain of custody form are placed into the paperwork pocket of the specimen bag and closed. This process ensures that the correct paperwork, correct labels, and correct specimen are ready for secure transport to the testing lab. The federal chain of custody form (DOT) is a 5-part form. Only the two copies bearing the unique numbers go to the lab with the specimen. The copies that bear the donor's name do not go to the testing lab. Thus, these specimens are anonymous in the sense that lab staff will never know the name of the donor. The lab courier stores specimens in the clinic in a secure refrigerator until end of day pick up. The courier signs them out in the presence of a collector who also signs, which thus maintains the forensic chain of custody. Specimens are delivered by courier to the testing laboratory, at which point, laboratory personnel who work only in the receiving area sign for the specimens. The carrier or courier signs to the chain again, which thus releases the specimens into the laboratory.

1. Receiving

Any carrier (FEDEX, UPS) can be used to transport specimens as long as it complies with DOT standards for such measures. Urine is not a bio-hazardous substance; however, other precautions are taken so as not to contaminate parcel post vehicles of transport. Public carriers are regulated under the International Air Transporter

Association (IATA) for private air carriers to transport dangerous good by air (International Air Transporter Association (IATA), 2013). Carrier representatives, just as local couriers, deliver specimens within forensic chain of custody procedures to the contracted testing laboratory.

Receivers document the condition of the package. They look for sufficient amount of specimen, leaking containers, signs of tampering and disruption of the forensic process. They must ensure the seal is intact, check for leakage, and match the container to the paperwork that accompanied it. All labels must match. Should a discrepancy occur in any part of the process, the lab staff may either reject the specimen for testing (if a fatal flaw) or may request an affidavit from the collection site to validate a part of the process. Fatal flaws are chain numbers and seal numbers that do not match, leaks, lack of donor signature, broken seals, temperature out of range, or the amount of urine inadequate for testing. Should one of these occur, the test is cancelled.

Identifier workstations are setup in a similar fashion so materials they need and use regularly are in familiar locations for each handler. Identifiers do not open samples. They assign a unique laboratory accession number to the specimen, which is a third unique number used in the identification of each specimen. This laboratory specimen ID number will be used to track the sample through the testing lab and is assigned both in number and bar code format. Identifiers have no defined educational requirements for the job and are trained by the laboratories to work within that particular system. Biohazard training is part of the training and orientation process. An annual competency evaluation of each employee is conducted and completed with the supervisor to ensure quality control and maintain competency. Background checks are performed on all laboratory personnel. Additionally, all testing labs are a substance free workplace; thus, similar policies that apply to the general population of workers in other venues are in effect at the labs in which forensic substance testing is performed. The determination is made at the receiving area as to whether the specimen can or cannot be tested. If approved for testing, it is passed through a one-way window to be opened and an aliquot obtained. From this point on in the laboratory, the specimen is tracked by the accession number bar code.

2. Forensic Lab and Initial Testing

Identifiers pass the approved testing samples on to the technicians to begin the testing process. The containers are opened and placed in batches of sixty. A minimum quantity of fluid is required for the sample to be tested. The batch is assigned an accession number and an aliquot is extracted. Aliquot is a portion of the original sample. A blind quality control is included in every batch of 60 samples for quality assurance purposes, which serves as a measurement of reliability. Two immune-assay, open quality control (QC) test samples go through with the batch. One of the QC samples is below threshold cutoffs and one is above. It is crucial to know that the analyzing machine is performing at the required cutoffs. The laboratory can include the blind quality control and the client can include one as well. The analyzer for the initial test is calibrated at cutoff levels for substances as established by the DOT. A negative result does **not** mean that no substances were found. A negative result is also reported when amounts are below the cutoff levels for the specific substances at the confirmation level. Employers need to be aware that the individual may be using, and not enough substance was detected at the time of this particular test.

It is possible for the MRO to request a quantification level to determine, if any level of substance is present, which is done frequently for those specimens sent in from substance treatment centers at which clients are supposed to be “substance free.” The practice is also conducted in the forensic arena in some areas.

Negative certifying scientists confirm initial negative results and produce a screening report containing batch results. On average, approximately seven to eight percent of all tested samples are forwarded for confirmatory testing. This number varies by state and by season, as well as by substance; the numbers change based upon the aforementioned variables and what substance is currently strong in an area (e.g., in the Minneapolis suburbs, heroin is strong). Initial testing, such as enzyme multiplied immunoassay technique (EMIT—a brand name), is found in some of the labs. Other approved screening techniques and products are also used. The purpose of EMIT/screening testing is designed only to detect anything present in a specimen sample not normal human urine. At this point, and when, the specimen meets the qualifications

for normal human urine, the specimen sample is determined to be negative and the process ends. A report of NEGATIVE is generated and no further testing is required. The results are captured, catalogued in the screening report, and the process for a negative sample is concluded. Should the specimen—not be determined negative, the specimen is sent on for further testing using GC/MS confirmation.

Breath, blood, and saliva will all reveal the same alcohol content if collected simultaneously. No legitimate medical reason exists for people to have alcohol in their breath, blood, or saliva. Urine alcohol may occur in diabetics, pre diabetics and in persons who have consumed a high carbohydrate meal, in addition to being found in the urine of a person who has ingested alcohol. In the non-DOT environment, a QED saliva alcohol swab test is often done. If no alcohol is detected, it is a negative test. If alcohol is detected, it is followed by a blood draw. The blood sample is sent to the testing lab. In the DOT environment, a QED saliva alcohol is also done as well. In the DOT, if the swab is found to have alcohol, it is followed by a breath alcohol test using a DOT approved breath-testing device. The breath test first has a screening test for alcohol; if negative, a report is generated. If positive on the screen, a 20-minute time period must elapse, a new mouthpiece provided to the donor and a confirmatory alcohol breath test is done. The donor cannot be out of the collector's direct sight during the time from beginning of the initial test to the conclusion of the confirmation test. At the conclusion of the confirmation test, a computer print out report is generated.

3. Confirmatory Testing

Confirmatory testing with GC/MS is conducted on all non-negative samples found to have substances above established and pre-determined screening cutoff levels. It provides the molecular fingerprinting of a particular substance as detected in the initial testing phase. Confirmatory testing is done by yet another group of laboratory personnel. These individuals are required to have additional education and experience. Many have master's degrees in chemistry/toxicology/advanced biosciences. The confirming certifying scientist must maintain chain of custody requirements for the portion of the sample forwarded for the GC/MS tests. When the sample is forwarded from the initial

certifying scientists, documentation from the assay will indicate what substances the confirmatory test is seeking to verify, such as cocaine or amphetamines. It should be understood that many specimens are found to contain more than one substance.

Differences occur in screening test detection and confirmatory testing. The confirmatory panel ensures the process is looking for a specific substance. Chromatography is only used in the confirming process. Liquid (LC) or gas chromatography (GC), the GC/MS mentioned in many of the policies, breaks down the compound to indicate what it is and how much is present, which is the last part of the process of confirmatory testing. LC testing is the newer of the two methods. When temperature instability matters, LC is the preferred method. Otherwise, GC/MS is most often used and is proven reliable.

4. Disposition and Disposal

Disposition and disposal of a sample marks the final stage of a specimen sent to a laboratory for testing. A negative specimen sample is usually retained for two weeks, and then discarded through a disposal process. The specimen sample of a confirmed non-negative test is held for a minimum of a year in a freezer to accommodate any challenges or disputes of the findings that may arise. If a result is challenged, the original specimen sample must be sent to an entirely different laboratory from the original testing laboratory to eliminate the original laboratory as a factor in the non-negative result and remove doubt from the forensic, scientific, and toxicological process.

Challenges to the technical process can be costly and lengthy. Additional costs associated with challenges can cost many times more than the testing process itself. The additional expenses are the responsibility of the donor of the specimen as this person initiates the challenge of a test result if disagreeing with the original results. Costs are in the neighborhood of \$300.00 and must be received prior to authorization given for reconfirmation. This process is managed via the medical review office. A specific reconfirmation test for a single test must be performed as opposed to the usual mass processing of a batch. A tremendous amount of paperwork is required and created to duplicate initial findings, to corroborate original laboratory findings, and to document the

different laboratory's result. The specimen being challenged is kept frozen in a freezer and is ground up and disposed of once the matter is closed. Laboratories are only required to keep specimens for a year although challenges may take longer. Human action is the impetus of error in the testing process and not the technical aspects. Although collectors of DOT specimens are required to have current certification, the human factor holds the possibility of error. From firefighters choosing to use substances, to errors in the collection process, to methods used by the donor to alter the specimen sample, adulteration and dilution of specimens, to incomplete or inaccurate paperwork, the process can be compromised wherever a human is involved. Should a case be heard in a court of law, laboratory processes are able to pass integrity challenges because of measured and recorded set parameters, which are guaranteed with quality assurance methods that can be substantiated.

A point of contention exists in the area of technical reliability for policies intent on detecting substance use among firefighters. A negative test does not mean substances were not found in a sample. No substances will produce a test result of negative, but compound amounts below threshold limits will also yield a negative outcome. These results are labeled as negative and no further disposition is required. In other words, a firefighter who is using or spaces out usage could go unnoticed because of thresholds rather than technical fallibility per se, which means this firefighter is overlooked and use goes undetected. It is vitally important that the substance testing policy be written to enable the employer to make and publish a document that reflects firmly what its policy will be, particularly in cases of reasonable suspicion and post incident testing, in addition to how it will handle diluted samples. Written policy must specify what will be done following a test result that is determined dilute; that is, determined negative when evidence of substance use exists. In a substance-free workplace, "substance free" means NO USE.

Technological advancements in the field of forensics and toxicology remove the doubt(s) once associated with substance testing. Today's testing processes stand up to challenge. Independent aliquot testing, a reduced number of places for errors to occur, and randomized testing are important components that have and continue to steadily

improve substance testing and employee and public safety. Randomization is a complete process that covers all aspects of testing. The DOT requires 25 percent of personnel to be tested for substances, which one department, the Austin Fire Department, (Austin Fire Department, 2010a; Austin Fire Department, 2010b; Collective Bargaining Agreement Between City of Austin and Austin Firefighters Association, Local 975, 2009) used in their random testing policy—each year up to 25 percent of the number of firefighters in the department will be randomly tested—and 12.5 percent for alcohol (Random Testing Rates, 2014).

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IV. DATA COLLECTION

Despite all the information and knowledge gathered on the cost, legal, logistics, and technical aspects of substance testing, little sense of what good policy should look like is available, nor what standards or best practices among fire agencies might be. Since large-*n* survey work was not possible, it made sense to conduct a smaller-sample content analysis on a purposefully chosen set of agencies, in the hopes that meaningful themes or patterns would emerge, as might the elements of a national model. The goal was, therefore, to select as representative, though small-*n*, a sample as possible, which was challenging, because it is hard to capture the full spectrum of anything with such a small sample. Instead, major cities were chosen, with large, professional, sworn forces, on the assumption that they would have the best-developed policies on any given matter. No evidence exists to suggest that any correlation has occurred between substance use and the size of the agency or city. Rather, the big ones are more likely to have the advantage of legal departments, lots of experience with human resources issues, etc. However, some variations in the organizational and legal structures needed to be represented in the sample, specifically to do with right-to-work or collective bargaining; that one characteristic, as was hypothesized, could have a great impact on how this issue is handled. To this end, two policies in fire departments in right-to-work states were chosen (Arlington County and Atlanta), and 10 from cities that allow union formation (DC Fire & EMS, Chicago, Seattle, Fire Department City of New York (FDNY), Austin, San Antonio, Boston, Los Angeles, Dallas, and Minneapolis). Three of the 10 do not mention the department's substance-testing policy in the union agreements (FDNY, Los Angeles, and Dallas).

A. SAMPLE SELECTION

The 12 fire departments used in this analysis were chosen because they are full-time, career fire departments that provide around-the-clock emergency response. They were also chosen because of their distribution and variance of size, the use and availability of collective bargaining agreement (CBA) language, right-to-work state laws,

and their location throughout the country. The sample contained fire departments of various sizes, from as small as 350 members to 14,000. The majority of the fire departments have collective bargaining agreements that work in concert with their substance testing policy, with the exception of those located in right-to-work states. Whether collective bargaining agreement language was available or accessible also factored into the decision to use a particular department in the analysis. In addition to CBAs, ordinances and local or state statutes linked to a respective fire department's substance policy were sought to buttress the substance testing policy. It was unknown at the time of selection which type of substance testing each of the departments used. However, once the analysis began, the particulars of their policies began to surface and the value of the analysis became apparent. The sample set is highly representative of career fire agencies in the following ways: continuous service, paramilitary organizational structure, dedicated administrative functions, comparable response capabilities, observance of like national standards, and dedicated funding. It is not representative of paid-on-call or volunteer departments in small or rural communities and wild-land fire agencies. It is not possible to predict the applicability of the findings to them, nor how inclusion of these types of agencies might have affected the outcomes.

B. SAMPLE DATA AND SOURCES

The evidence collection in this project consisted of three phases. Prior to the analysis, literature pertaining to first responders and occupational stress, use, treatment and privacy and testing was collected and analyzed. The literature review established a foundation of information and research available for the above topics but also confirmed a dearth of information available or accessible specific to firefighter use of substances. Although the literature was rich with useful information relative to the stress of firefighting, PTSD, alcohol use, addiction, the importance of procedures in substance testing and privacy connected to testing, fire department-specific information was scarce. Specific information, such as usage among firefighters, statistical data, number of terminations or discipline related to substances and rehabilitation facts, could not be found. Therefore, a policy analysis was warranted considering the lack of fire department-specific information.

Twelve fire department substance-testing policies were collected, along with CBA language and any local edicts that accompany the policies. Of the 12 departments, 10 had CBA language available for review.¹¹ Two of the fire departments (Arlington County and Atlanta) are located in right-to-work states and do not have firefighter unions. Each set of policies was reviewed and details from each were aggregated in an Excel spreadsheet for coding purposes. Similarities and differences were documented, as were the types of substances for which each department tests its firefighters. The researcher conducted a comprehensive analysis of each policy set, noting its purpose and objectives, who the policy covers, what type of testing the department performs, and the process it follows when a firefighter is selected for testing. City policies and legal language (federal, state and local) were also obtained and analyzed. Based on the results of the first round of coding, additional sources and evidence were acquired; examples are federal and state regulations that emerged across the first analysis.

C. LIMITATIONS

This research was based exclusively on open-source literature and published documents and sources. It examined substance testing policies from career fire departments only, and not paid-on-call, volunteer, or wild-land fire agencies. The NFPA estimated 30,125 fire departments existed in the United States in 2010. Of those, eight percent are career (“National Fire Department Census Quick Facts,” 2012). This number is deceptive because it does not take the functionality of these agencies into consideration. However, policy language and testing processes are as translatable and accessible for these departments not represented in the analysis as it is for the various size departments that were used. The research did not involve interaction with personnel from the specific departments, which precluded the researcher from gaining an understanding of departmental idiosyncrasies, dynamics, or perceptions about the respective agencies and policies. Knowing whether a fire department was satisfied with its substance testing policy, and how it rates or prioritizes the policy, as far as value or benefit, would have been meaningful to the project. Ascertaining whether or to what extent firefighters have

¹¹ DC Fire & EMS, Chicago, Seattle, FDNY, Austin, San Antonio, Boston, Los Angeles, Dallas, and Minneapolis.

successfully been treated for substance use and how many have failed a substance test would also have been useful. Similarly, collecting information on firefighters being disciplined or terminated because of substance use, and if ignorance was used as an excuse, would presumably have informed the findings.

Other information that would have shaped this project is laboratory experiences, time lapses, cost and deterrents, and statistical data. Collecting information from the various fire departments on whether or not they have ever received a false positive from a laboratory would have offered a relevant juxtaposition while working through the technical reliability section. The length of time that elapses between a non-negative substance test result and action by the department would have given a tremendous amount of insight into and worked in harmony with other logistical and cost issues. Collecting actual, nominal, and prohibitive cost similarly would have contributed to cost interpretations. Being aware of substance testing policy deterrents, such as a lack of fiscal support and political opposition, would have informed the research. Finally, it would have been desired to determine whether or to what extent the loss of highly trained firefighters proved a disincentive to more stringent substance testing. The majority of the issues noted in this paper were well outside of the main scope of the project. The point that came closest to any of the language found within the policies were time durations of when a firefighter had to arrive at a collection site to provide a sample and some mention of turnaround times, as in the Austin and Minneapolis policies, for laboratories to return results to an agency. Otherwise, the limiting nature of gaining insight into these points did not impede the project's overall objectives; they would have added different dimensional layers for consideration.

In addition to these limitations, other limits, biases and goals surfaced in the project and methodology. Limits to time, liberties/permission, dependence on others and personal contact occurred that the researcher could not avoid. Time was a huge limitation for a few reasons. First, time would not allow more policies to be used in the analysis. Institutional Review Board impediments caused the researcher to rework the methodology a few times prior to the commencement of the project. Extreme caution had

to be exercised when it came to choosing how best to gather departmental information without turning the project into Human Subjects Research.

Biases encountered during the project were surprisingly more influential than might have been expected. Eight of the 12 fire department policies employ random substance testing as their primary method of deterrence.¹² Firefighters caught with substances in their system are advised of their right to union representation if discipline or termination is forthcoming. The researcher's professional opinion prior to the execution of this research was—and remains—that the benefit of union representation is compromised by the effort to protect employees who engage in less than commendable behavior; this bias certainly influenced the research design and execution. It is related also to the researcher's conclusion that a “zero tolerance” policy is in fact superior to other policies, and should be the model on which a national fire standard is based.

¹² DC Fire & EMS, Chicago, FDNY, Austin, San Antonio, Boston, Dallas, and Atlanta.

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V. ANALYSIS PART I: QUALITATIVE DATA CODING SUMMARY FINDINGS

What follows is an overview of the coding of the data set, as well as an analysis and interpretation of the themes and patterns that emerged from the coding.

A. UNIVERSAL TO ALL

A firefighter's inability to resist urges, heal from injuries, or cope with stress, shapes institutional attitudes and actions to address this shortcoming. All 12 agencies had a policy for substance testing. Each policy recognized the threat posed by substance use. Concern for the welfare of the public, employees and coworkers, job safety, and quality of firefighters' work drive these policies. By reducing the likelihood that employees will improperly use substances, fire departments make a good faith effort to maintain a substance-free workplace. To do otherwise would be detrimental to firefighters, the department, and those they serve.

The stakes are high not just for the risk of liability but because fire departments are trusted to respond to all sorts of emergency events. While all the policies forbid the use of substances, it is worth noting that none immediately terminates firefighters for having either substance in their system. Due process notwithstanding, the policies are not designed to put an end to use or users. This lack of zero tolerance may well spur usage as opposed to preventing it. A common permissive inference is the takeaway after reviewing each policy. Although it is unlikely that even tacit permission is being granted, this implication does raise questions as to the reason departments do not release firefighters from employment after testing positive for prohibited substances; multiple chances were widely given. Legally speaking, departmental liability increases with each incident. With a high incidence of firefighters suffering from post-traumatic stress disorder, and a high susceptibility for dependence should a firefighter fail to cope responsibly, safety becomes even more of a concern than normal. Since safety is a priority in the fire service, repeat offenses of substance policy language are, therefore, incompatible with industry safety standards.

EAP and rehabilitation language existed in every policy. Woven into procedures are steps to aid and support substance-dependent firefighters through comprehensive treatment programs intended to wean them off their addiction. Firefighters can voluntarily request help or be directed into an internal or external program. Consistently, each policy placed the responsibility of attending, arranging leave time, compliance, and cost firmly on the employee. The length of program norm throughout was for a firefighter, after attending a rehabilitative program corresponding to their level of dependence, to meet follow-up terms that last for upwards to a year. These terms include more frequent unannounced substance testing. Failures to comply with the terms and conditions of an EAP or other rehabilitation program result in the execution of any discipline held in abeyance, administrative leave (with or without pay), and termination. The frequency of substance testing following rehabilitation is at the discretion of the employer. The conclusion, in some instances after unsuccessful and repeated participation in a rehabilitation program, is a firefighter being discharged from employment.

Relationship of “Universal to All” Characteristics to the Four Criteria

A company must develop administrative processes once the right to test has been legally obtained (Bryan, 1998, pp. 28–32). From the legal perspective, each department is in compliance with the DOL requirement to have a policy and places the responsibility on the employee to know its contents. Similarly, compliance is demonstrated with regard to the DOT position related to substance testing of safety-sensitive transportation employees (i.e., aviation, trucking, railroads, mass transit, pipelines, and other transportation industries), which can include firefighters. The policies also accord with civil rights legislation contained in the ADA, federal grantee language in the DOL Drug-Free Workplace Act of 1988, and Title 21—the Controlled Substances Act, in which drug and paraphernalia are defined, and the five schedules of drugs established.

Although the Austin and San Antonio policies mention zero tolerance, all the policies slant towards giving a chance or chances to rehabilitate. The absence of a zero-tolerance position in the policies aligns with the DOT’s provision of involving a qualified SAP and EAP where rehabilitation is provided.

Regardless of the type of testing used by a department, all departments are obligated to comply with certain scientific and technical parameters, which are accomplished through their association with certified collectors and laboratories. In doing so, each department adheres to language contained in the SAMHSA within the U.S. DHHS guidelines for federally regulated workplace substance testing, evaluating collection sites, and verifying and documenting compliance with federal requirements. Since the manual is for informational purposes and can be modified to reflect the federal agency's drug-free workplace policy, fire departments are at liberty to devise a substance testing policy according to their needs.

B. COMMON TO MOST

The few commonalities across the policies were least likely to be predicted at the outset of the analysis. Notably, the majority of departments (eight¹³) use random substance testing as their method of choice for deterring and detecting prohibited substances. With the exception of one department (Atlanta), random substance testing was an integral part of their business model and structure and funding did not appear to be controversial or problematic. Although Atlanta's policy explicitly mentioned that random substance testing would be performed only if funding was provisioned for it, the fact that they employ random substance testing as their primary approach to deterrence is significant. Whether set up as an internal structural component of a department or as an external contracted function, the random substance testing of individuals, units, or workgroups are a predetermined function unique to each department. The prearranged selection ranged from a select number to a percentage to groups of entire crews.

Profound differences in policy language among the 12 departments concerning substances and concentrations resulted in distinctions between each of the policies. Prescription drug use triggered a shift in the language in nine of the policies, and according to the CDCP, is on the rise¹⁴ (The White House, 2012). It is the nation's fastest-growing substance problem among the general population and has been classified

¹³ DC Fire & EMS, Chicago, FDNY, Austin, San Antonio, Boston, Dallas, and Minneapolis.

¹⁴ DC Fire & EMS, Chicago, Seattle, FDNY, Austin, San Antonio, Boston, Dallas, and Minneapolis.

as an epidemic (The White House, 2012). Shared emphasis on forbidding the misuse or illegal use of prescribed medicine was not only unexpected, but moreover, signifies progressive shifts in policy phraseology adaptive to changing substance preferences. The rapid growth in prescription drug use may be contributing to the lack of extensive drug categorization, types, definitions and distinction in the policies that address the matter. For instance, terms, such as prescription drug, controlled substance, and legally prescribed medication, were used to distinguish these substances in language. However, the fact that policy adjustments have been made for this troubling purpose speaks to the awareness and responsiveness of cities and nine of the fire departments—DC Fire & EMS, Chicago, Seattle, FDNY, Austin, San Antonio, Boston, Dallas and Minneapolis—to this matter.

Supportive language in collective bargaining agreements was another shared characteristic among many of the policies. Having fire administrations and labor unions concur on the damaging nature of substances is a massive topic of importance on which to unite. Of the 10 departments with collective bargaining language, seven¹⁵ contained wording regarding substance testing, and three (FDNY, Los Angeles, and Dallas) did not but all were concerned about firefighter safety and the damaging effects of these substances on firefighters, and in the work environment. Of note, fire departments located in right-to-work states—Virginia and Georgia—did not have unions or collective bargaining agreements to offer for review as part of this analysis. Firefighters employed with these non-unionized departments are at the mercy of harsh or lenient substance testing policy language consequences.

Sworn members of a fire department were the predominant emphasis of these policies. Although some of the policies had language about civilian employees or noted exceptions for higher-ranking administrative positions, the main focus of substance testing was directly on firefighters who respond to emergency events or who engage in compliance and regulatory functions, with the exception of DC Fire & EMS whose policy

¹⁵ DC Fire & EMS, Chicago, Seattle, Austin, San Antonio, Boston, and Minneapolis.

covered non-sworn employees. Sworn members were most commonly the focus of the policies, as they are indeed the focus of this analysis.

Relationship of “Common to Most” Characteristics to the Four Criteria

Eight of the fire departments conduct random substance testing, which according to SAMHSA, demonstrates their taking advantage of the ability to devise their substance testing policy according to their needs.¹⁶ Seven of the policies have supporting collective bargain agreement language.¹⁷ Employers of unionized personnel cannot unilaterally establish a random-testing program or decide when to test due to reasonable suspicion without an agreement with the union, according to Bahls (1998, pp. 104–16). Consensus language of this sort establishes the foundation for logistical arrangements for sworn members to be tested that are prepared by everyone, as well as involved them in the process. This language is particularly relevant when shifting personnel around to cover vacancies created when random testing is performed, as well as the compensation and disposition of the replacement and relieved firefighter.

The types of substances concentration levels described in the policies make not only logistical points, like communicating the policy, privacy, chain of custody, and testing and handling the results, central to this theme, but also forensic lab testing and confirmatory testing of technical reliability criterion. The nine departments that mention prescription drugs entrust the technical reliability of testing laboratories with the capability to distinguish and detect all the substances that violate their policy.¹⁸

C. RANDOM/UNSYSTEMATIC

The policies diverge considerably in several areas. One of the many ways the policies vary is the method, logic, or algorithm by which the departments decide how to conduct the testing of their firefighters. The preferred form of testing across the departments is random testing. Some departments also use reasonable suspicion, post-accident, pre-employment, promotional, and position specific type testing to reinforce

¹⁶ DC Fire & EMS, Chicago, FDNY, Austin, San Antonio, Boston, Dallas, and Atlanta.

¹⁷ DC Fire & EMS, Chicago, Seattle, Austin, San Antonio, Boston, and Minneapolis.

¹⁸ DC Fire & EMS, Chicago, Seattle, FDNY, Austin, San Antonio, Boston, Dallas, and Minneapolis.

their primary method. No apparent correlation exists between these methods, and any other coding variable or agency characteristic. The facility that does the testing ranges from an internal unit or division to an unspecified third-party clinic to a specific, named facility. How the firefighters are selected for testing varies greatly as well. Some departments (DC Fire & EMS, Austin, San Antonio and Boston) test a set percentage of its total force, while others (Chicago, FDNY, and Dallas) select firefighters using a particular number (for that day's testing), unit or division but no set total or minimum number was used. Many (DC Fire & EMS, Chicago, FDNY, Austin, San Antonio, and Boston) that conduct random testing use a computer-generated selection method. The agency that produces the computer-generated selection process for a department varied as well. DC Fire & EMS uses its HR department, Chicago uses an outside consultant, FDNY assigns the duty to its management analysis planning unit, while Austin, San Antonio and Boston use a third-party contractor or vendor.

Once the firefighters have been chosen by whatever method of selection, the location where they provide specimen samples varies. When necessary, all the departments perform off-site collection and make logistical arrangements for firefighters to attend appointments. Collecting specimens at the firefighters' worksite appears to be the most common, because it is the most convenient, method. None of the policies permits direct collection observation and only one (FDNY) explicitly states when a donor would be allowed to flush the toilet. Austin and San Antonio clearly state the amount of urine required from each firefighter. Slightly more—DC Fire & EMS, FDNY, Arlington, Austin, San Antonio, and Dallas—mention whether the specimen would be split for confirmatory testing, how soon the confirmatory test would be performed, and how long samples that test positive would be maintained for recordkeeping purposes or challenges.

Although every policy prohibits the use and tests for alcohol, the thresholds are inconsistent. Even controlling for variance in body mass, tolerance levels, and so forth, it would have been expected to see more uniformity in the approximate allowable range. Neither does this lack of uniformity appear to correlate with the respective state blood alcohol concentration (BAC) levels. For example, according to Mumenthaler, Taylor, O'Hara, and Yesavage (1999), results from studies investigating the effects of alcohol

following similar doses of alcohol in women and men suggest that women are more sensitive than men to the physiological effects of alcohol; women achieve higher blood alcohol concentrations, and report feeling more intoxicated than men (pp. 55–64). Lynch, Roth and Carroll (2002) suggest that women and men differ in their biological response to drugs due to an innate biological sex difference; that is, mechanistic, metabolic, or hormonal differences may cause women and men to respond differently to drugs (pp. 121–137).

One department (Dallas) does not tolerate any alcohol in the system. This policy specifies a 0.00 BAC as the only acceptable level. A firefighter having anything above that level is subject to disciplinary action. Other policies range from 0.02 BAC to 0.08 BAC (see Table 2). With these levels, it is conceivable that a firefighter, depending on the body type, could be on duty responding to emergencies in an altered condition. Even though legal interpretations of alcohol concentrations are established to prevent drunk driving and prosecute drunk drivers, these policy levels serve a completely different goal.

Firefighters operate large vehicles, wear heavy fire suppression gear, don hazardous materials suits, operate watercraft, and use equipment like fire hoses, axes, saws, ladder, ventilation fans, extrication tools, and stabilizing and rigging devices in the performance of their duties. They also use sophisticated hazardous materials detection equipment, and computer plans and programs, to mitigate chemical, biological, radiological, nuclear, and explosive events to preserve life, reduce contamination, and protect the environment. They respond to fires, emergency medical calls, vehicle accidents, hazardous materials incidents, building collapses, high-angle and below grade rescues, water emergencies, natural and man-made disasters, homicides, violent acts, etc. All these require agility, cognition, quick reflexes, instinct, alertness and physicality, adaptation, and composure.

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
0.02	0.04	.02 or .04 not in the policy in other doc	0.05	0.04	0.08 (Texas Penal Code)
San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
0.04	0.04	0.01 - 0.08	0.00	0.02	FFRs 0.02 / FCs 0.05

Table 2. Alcohol Concentration Levels by Department

The range of substances tested for is variable from policy to policy. Amphetamines, cocaine, marijuana, opiates, phencyclidine (PCP), and barbiturates are fairly common from department to department. However, some test for the actual chemical while others test for derivatives and metabolites of these substances. Other familiar terms, such as Quaaludes, heroin, THC, benzodiazepine, and anabolic steroids, are scattered through the policies. Prescription medications (darvon, methadone, morphine, codeine, and valium) are mentioned, but not every policy defines these terms or uses them consistently. Narcotics, synthetic substances, other designer substance products and other substances add to a rather extensive, albeit imbalanced list. Generic terms are used without definition throughout the substance policies routinely, thus representing yet another variability between the policies.

In firefighting, timing is everything. Many aspects of the job involve getting to the scene before it is too late, before further harm can befall someone, and in some instances, in advance of conditions worsening. In this respect, prior use is a critical issue. Prior use—durations of time prior to the firefighter reporting for duty—of substances is antithetical to the essential job function and purpose of firefighting and emergency response. Many of the policies mention this very concept in a purpose or statement of intent, which is then echoed in collective bargaining agreement language for the departments that have unions. To suggest a time prior to reporting to work as an admissible time in which a substance can be used is tacitly permissive. Although many of the policies do not dictate a specific time frame in which a firefighter can participate in substance activities prior to work, others do (see Table 3). One policy (Arlington County) defines its timeframe as “prior to work” with no timeline whatsoever. Others give timeframes, such as four hours, eight hours, and 24 to 72 hours before duty. The longest

time of all the policies is 30 days. This area of the policies is most concerning as it enables a firefighter to use, thereby possibly leading to addiction. However, for those relying on their services, the far worse consequence is that they are at work intoxicated or under the influence.

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
w/i 4 hrs prior to duty	within the previous 30 days	alcohol - w/i 8 hrs. of performing safety sensitive duty	24 - 72 hrs	prior to work	Specific time not given
San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
Specific time not given	Specific time not given	Specific time not given	Specific time not given	Specific time not given	Specific time not given

Table 3. Prior Use Language by Department

Equally unsystematic is the immediate disposition of firefighter after they have provided a sample, and the number of chances firefighters are given to test positive on a substance test before they are released from employment (see Table 4). On the first issue, the immediate disposition of a donor, several departments relieve the firefighters from duty; others place them on administrative leave (with or without pay), and then some return individuals to their assignment work location. Since not every firefighter can be removed from assignment pending specimen results, it is likely that the aforementioned stances are for the occasion of a reasonable suspicion test. What an agency should do or does after a random substance test is conducted is difficult. These instances could be beyond problematic from a staffing standpoint should a larger number of firefighters than expected test positive. Yet, provisions allowing repeat offenses in violation of policy language that allows firefighters to maintain their employment is explicit. In some cases, firefighters could have repeat experiences with testing positive and attend rehabilitative or assistance programs before more extreme action is taken against them, which accords with employee assistance language contained in DOT rule 49 CFR part 40. Conventional wisdom would suggest that too much has been invested in these individuals to dismiss them except as a last resort.

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
Removed from duty for 24 hrs.	Relieved of duty and put on admin leave w/pay pending review	Immediately removed from work assignment	Prohibit (on and off-duty) from leaving premises w/o permission, relieve the on-duty from duty	Other duties or administrative leave	Returned to duty or Admin leave
San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
Returned to duty or Admin leave	Returned to tour (duty) or admin leave	Not left alone and not allowed to respond	Relieved from duty, returned to work or admin leave w/o pay	Removed from duty upon receipt of a positive result	Provide the employee with a form to acknowledge the policy and consent to testing

Table 4. Immediate Disposition of FER by Department

The testing facilities that these departments use for specimen testing, for obvious geographical reasons, are different (see Table 5). However, beyond this aspect, the qualifying characteristics and the doctrine(s) that governs their testing practices is significant to the topic of testing but did not play a role in the analysis. Nonetheless, the reliability of the test results that they produce amplifies the clinics' role and practices when a firefighter's profession hinges on this detail. Although more insight into these facilities may prove worthwhile, not only for the quality of their work and their capabilities, but the utility to the agencies seeking their services. DC Fire & EMS exclusively has its own police and fire clinic (PFC) where specimens are collected and then sent out to a third-party laboratory for testing. The benefits, costs, and effectiveness of this capacity (relative to the other agencies) are unknown. Nevertheless, the fact that this agency has its own clinic speaks to the priority assigned to substance testing, and thus, to the support (i.e., financial, staffing and political) granted such an undertaking.

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
Internal (PFC)	Internal (RDATU) or designated laboratory	Appropriate collection / testing site	licensed by the New York State Dept. of Health	The County by trained & qual. Personnel	Third party collection site
San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
Vendor - company under contract w/the city	independent third party contractor / SAMSHA certified lab	Third party laboratory (Quest Diagnostic)	Contract laboratory	2 testing facilities (Caduceus Occ. Health)	Not owned or operated by the City of Minneapolis

Table 5. Testing Facilities Used by Department

The timeframe when a substance test result should be provided to the requesting agency is another unsystematic aspect of the policies. The Austin and Minneapolis policies indicate how long the contracted facility should take to return results from a screening test. Minneapolis states that the testing laboratory shall disclose the report to the employer within three working days after obtaining the final results, and that the employer shall inform employees who have undergone substance testing of their rights. The other policy mentions that for reasonable suspicion, the results will be available eight hours after the lab receives the sample. Other than these explicit periods, times for returning results are not specified.

The testing method used for examining the specimens may influence the timing but very few of the policies make the technique explicit (see Table 6). For urine testing, initial testing is conducted using an EMIT to detect prohibited substances. Confirmatory tests are performed using the GC/MS testing methodology. The confirmatory test is used as an alternative test in the event of a non-negative initial test. For alcohol testing, evidential breath testing or Breathalyzer devices are detailed in some, not all, of the policies. However, most of the policies mention that urine, blood, or breath would be tested but do not outline the specific scientific method of detection.

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
Urine (EMIT & GC/MS) & Breathalyzer	GC/MS & Breathalyzer	Urine & Breath	EMIT & GC/MS-confirmation test	Urine, breath or blood and other professionally accepted tests	Urine & blood
San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
Urine (GC/MS). Blood & breath (EBT) are for post accident	Urine & breath (EBT)	Urine (blood if unable to provide urine due to unconsciousness)	Urine (EMIT & GC/MS) & Breath, blood or serum	Urine & Breath / or blood, if requested	Urine, breath or blood

Table 6. Testing Method Used by Testing Facilities by Department

A plethora of regulatory documents is incorporated into the various policies and is used to conduct substance testing methods, parameters, qualifications, and certifications, which is also an area of the analysis where the policies diverge. At the conclusion of the policy review, it was indistinguishable what primary document, if any, is the guiding document for substance testing in the sample agencies. City policies, state laws, federal guidelines and codes are in use; however, none is defined as the primary statute. Some of the regulations repeat in a few of the policies, but overall, more differences than likenesses occur. Upon close review, the main texts in use are from the DHHS/SAMSHA, Controlled Substances Act, Cannabis Control Act, the DOT, the CFR, the Drug-Free Workplace Act of 1988 and the USC. However, different versions even within these are more frequently applied codes. The vast regulatory and policy diversity within, between, and across departments, is overwhelming and complex.

Wide deviation in the kinds of on- or off-duty behavior that would trigger as a violation of a department's substance policy occurs, thus requiring a substance test. This criterion is not concerned with the disciplinary response of a department to a firefighter who tests positive for substances. Instead, the emphasis is on the prior illicit behaviors that lead to a firefighter's involvement with substances or would give the indication (or suggest) that a firefighter may have a substance use issue. All the policies assert the department's (or the city's) opposition to choices that involve substances while on duty. However, not every policy addresses off-duty behavior that could lead to positive test results should a firefighter be selected for testing (see Table 7). The policies that do cover

off-duty exploits lack a common set of conditions that violate the procedures. In the policies that reference activities beyond use, offenses such as possession, sale, trade, delivery, transport, positive presence, purchase, distribution, food, paraphernalia, non-drug, manufacture, arrests, conviction, transfer, and under the influence, are included in the language.

	DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
Use / Detection	Illegal, OTC, Rx, alcohol	Illegal, abuse of legally prescribed, alcohol	Illegal, alcohol/ic, possession, sale, trade, delivery, OTC, Rx	Illegal, Rx, alcohol, positive presence, possession, sale, transport, delivery	Illegal drug(s) and alcohol	Controlled substances (Sch. I-V), Rx, alcohol, sale, purchase, distribution
Does it cover Conduct?	Pre & On duty	On & Off Duty	On duty	On & Off Duty	On & Off Duty	On & Off Duty
	San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
Use / Detection	Illegal drugs, Controlled Sub. (Sch. I-V), Rx, alcohol, OTC, food	Illegal drug, controlled substance, alcohol, paraphernalia, Rx, OTC, non-drug, use, possession, sale, manufacture, distribution, dispensation, arrest, conviction	Illegal/controlled substance & alcohol	Controlled substance (Sch. I-V), Rx, OTC, alcohol	Illegal drugs (controlled substances), alcohol	Illegal drug, controlled substance (Sch I-V), Rx, OTC, use, possession, sell, transfer, manufacture, distribution, dispensing, under the influence, conviction.
Does it cover Conduct?	On duty or in the workplace	On duty, off duty & in the workplace	On duty	On & Off duty	On & Off duty	On & Off duty

Table 7. Use/Detection and Conduct by Department

Relationship of “Random/Unsystematic” Characteristics to the Four Criteria

This portion of the coding included many aspects of the four criteria contained in Chapter III. A number of observations align with the cost criterion. The disposition of a firefighter before, during, and after being tested for substances, has cost implications for any fire department. Prior to a specimen being collected, cost arrangements and agreements must be made and entered into with contracted collectors and testing facilities for selection processes, vacancy and replacement procedures, collection methods and locations, and types of testing to be performed. The establishment of these components may prove worth pre-planning should a firefighter’s off-duty behavior require testing because of suspicion. Therefore, on- or off-duty behavior become factors of the cost set,

along with the firefighter's disposition. Both these circumstances can have direct and operational cost impacts for and to a fire department's budget regardless of the type of testing used, such as filling vacancies due to unexcused absences and testing, shutting down response apparatus for testing, and challenges that may accompany discipline. The costs associated with many of these issues signify the organizational dynamics that influence testing processes and practices, not to mention the organizational mentality regarding substances and approach to managing it. The final cost association is with the testing facility an agency uses. Whether a fire department elects to establish its own internal forensic testing processes, like DC Fire & EMS, or contract the services to a third party, cost must be considered as part of ongoing budget considerations.

Many of the points explained in cost cross over to the legality criterion. First, legal matters related to a firefighter's disposition must be attended to following a non-negative result and the challenges that could ensue. Due process, confidentiality, and chain of custody matters require attention, as well as counsel appointments for the fire department and the firefighter. It is possible that, as with cost, this matter could include both the on- and off-duty conduct of a firefighter. Regulatory documents may call for the most legal attention, both in the short and longer terms. Depending on what language a fire department chooses to adhere to and its ultimate inclusion in union language (if firefighters are unionized) legal interpretation is essential. The same is true for the establishment, structure, and use of a testing facility whether internal or third party contracted. From the firefighter challenge perspective, legal guidance may be useful for split specimens and access to samples to dispute results.

These policy elements have logistical significance. The organizational dynamics that accompany any type of testing method require logistical attention. Keys to efficient substance policy philosophies and application are establishing and maintaining clinic operations, arrangements, and timeframes for firefighters to provide specimens and maintaining response capabilities. In addition to the aforementioned key logistics portions of testing, the location or accessibility to testing and collection facilities, proper collection of specimens, and the uniformity of testing facility processes, contribute to logistics activities in that they entail pre-arranging and sustaining. Vacancies caused by

testing, shutting down response apparatus, and disciplinary actions trigger resource management to avoid operational gaps in service delivery.

The final category—technical reliability—again touches on previously mentioned points, such as internal or third-party testing facilities, collection, and regulatory documents. However, this grouping is regulation-driven and forensic-centered. From the types of substances testing facilities detect, to the regulations they follow to provide services to their clients, the entire purpose of testing hinges on the accuracy of the testing facility’s function, processes, and confidences. Overall, legal authority is granted to these facilities through the DOL to the DOT or the DHHS. Fire departments choose which panel of tests they would like to have performed. Then, the capabilities of the testing facility is relied upon to detect substance threshold minimum levels. If any of these or other chemical properties is found in a specimen through initial and confirmatory tests, a firefighter can call the technical reliability of the results into question and challenge the findings. Conversely, trace amounts of substances can be detected in a sample and not meet the threshold levels, which thus generates a negative result even though it contained substances. The randomness of human behavior from policy to use to testing ultimately has an impact in this area.

D. TOTALLY ABSENT

Consistency amongst the department policies is completely absent. The previous criteria establish the wide range of differences amongst the policies. None of the policies replicates that which is stated, included, or practiced in another policy—not to the letter. The essence of the practice is established—substance policies exist. Although substance testing is being done or advocated, which is important to deterring the use of substances, a standard or common manner of conducting it was not found in this analysis. Thus, the policy incongruity is that not every department is doing the same kind of testing, prohibiting the same behavior, using internal or external (like or similar) facilities, using the same founding regulations, or testing for the same substances or at the same thresholds.

Another absent aspect of the policies is a complete aversion for the behavior. Only Austin and San Antonio's policies mention 'zero tolerance' for substance use. Even so, they are compelled to establish, impose, and maintain a policy that prohibits the use of substances and offer assistance and rehabilitation to those who have violated it. Having a substance testing policy is proactive and a necessary practice. To detect substances, a department must have a method of detecting these substances. However, the mere existence of a policy does not prevent or deter substance use. A policy that fails to promulgate a zero-tolerance position, and then enforce that position with testing and rehabilitation procedures, is tantamount to tacit acknowledgement of substance use of the workforce in question, or even an implication that the matter is not critical to the mission.

Relationship of "Totally Absent" Characteristics to the Four Criteria

The existence of a substance testing policy does not ensure complete deterrence from substance use. The missing consistency from the policies is most likely found in the legal section of Chapter III. The processes outlined in the technical reliability section would then underpin legal. Glimpses of uniformity were found amongst the policies. The spottiness predominantly leapt between DOT—49 CFR 40 and DHHS (SAMHSA), which establish the guidance for substance testing transportation, non-transportation industry employees, and safety sensitive positions. Of which, language recognizing firefighting as a safety sensitive position can be found by connecting commercial drivers license (CDL) requirements to drivers of fire apparatus, and in DOT—49 CFR Part 382.103(d)(3). Not all fire departments require their apparatus operators to maintain a CDL. Thus, the dangerous nature of firefighting is not randomly assumed, and is in order when included in regulatory documents.

Although fire departments, with the exceptional of DC Fire and EMS, do not perform their own forensic specimen testing, cause for concern has arisen with regard to technical reliability in the detection of substances in a firefighters system. Incidentally, four specific points were also missing from the policies that should be of importance: 1) the doctrine used by all the testing facilities, 2) the capabilities of a testing facility, 3) the collection method and location, and 4) negative results not meaning compounds were not detected. The doctrine used by a testing facility is significant to provide fire departments

with the services they seek and to ensure that the testing facility is only performing the kinds of testing certified to perform. The capabilities of the testing facility is meaningful when entrusting the facility to comply with regulatory guidelines in addition to maintaining and quality assuring the methods. How, where, and by whom the specimen collection is made can introduce success or failure into the process, which may negatively alter a firefighter's career. Test results that detect substances but fall below allowable thresholds and produce a negative test result are not mentioned and draw two completely different conclusions: 1) the facility got it right and 2) a firefighter with prohibited substances goes undetected and is in an active status.

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VI. ANALYSIS PART II: THEMES, FINDINGS AND RECOMMENDATIONS

A. POLICY THEMES AND SUB-THEMES

This chapter further breaks down policy distinctions broadly covered in the Qualitative Data Analysis chapter. The different substance-testing policy nuances are grouped into nine themes categories with sub-themes. The main thematic analysis of these categories are policy, terminology, reasonable suspicion testing, justifiable cause, testing protocols, administrative differences, random testing, employee treatment, and standards difference. The groupings emerged as the dominant topics of comparison across the 12 policies.

1. Policy

This analysis confirms that each of the 12 fire departments has a substance testing policy. Although the size of the department, the dates, and what each department addresses in its policy vary, as does the existence of a policy, which comprises the foundation for the evaluation (see Table 8). Specific policies allow pertinent details outlined in this section to be compared and contrasted. The absence of a policy would have introduced additional factors and subtleties outside the scope of this project.

Department	DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
Alias	A	B	C	D	E	F
# of Employees	1900	5000	1000	14000	350	1200
Date	Mar-09	Feb-87 & Jul-04	Revised 2013	May-13	Mar-06	Oct-10
Type	Policy	General Order	Policy	Policy	Policy	Gen. Order / Policy
Department	San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
Alias	G	H	I	J	K	L
# of Employees	1660	1500	3400	1,760	985	390
Date	Mar-03 & Apr-10	Jan-82	Apr-89	Oct-89 & Feb-12	May-12	Jan-08
Type	Gen. Order / Policy	Policy	Procedure	Administrative Dir.	Policy	Policy

Table 8. Department Specifics

a. Motivation

Each department's motivation for having a substance testing policy was not explicit in any of the documents obtained. However, language existed in each that gave a sense of where the department's priorities or interests rested. For instance, the DC Fire & EMS policy recognizes the dangerous safety-sensitive nature of calls to which firefighters respond, which suggests that its policy and program are fundamentally geared to firefighter safety and the response component of the agency's function. Chicago, Seattle, FDNY and Boston note a duty to their respective communities. Making the public the emphasis of these policies attaches a sense of communal responsibility to firefighter behavior and links their actions directly to those who fund the department—the taxpayers. The remaining policies give emphasis to a substance-free workforce and work environment.¹⁹ Placing an emphasis on the work environment allows the remaining departments to make other firefighters and those who work with them safer and substance-free.

The perspectives are of obvious importance or no need would exist to emphasize a policy's impetus. Basic policy parameters and processes would independently meet the need. Additionally, these reasons may influence the type of testing a department chooses to perform. Three of the four departments that focus on the workforce and work environment use reasonable suspicion testing as their primary method of testing.²⁰ Local governments, communities, and departments invest money, time, and training for fire service protection. These policies discourage behavior that would contradict or diminish their mission.

b. Purpose

A fire department would likely implement a policy for five reasons: detection, deterrence, rehabilitation, public safety, and liability (see Table 9). Although not explicitly contained in purpose statements within the policies, the Table 9 gives an indication of the reasons the 12 departments probably have a policy.

¹⁹ Arlington County, Austin, San Antonio, Los Angeles, Dallas, Atlanta, and Minneapolis.

²⁰ Arlington County, Los Angeles and Minneapolis.

Department	Detecting	Deterring /Zero Tolerance*	Rehabilitation / Health**	Public Safety	Liability	Image (Outlier)
DC Fire & EMS	X	X	X / X	X		
Chicago	X		X / X	X		X
Seattle	X		X	X		
FDNY	X		X / X	X		
Arlington County	X		X	X		
Austin	X	X	X / X	X		
San Antonio	X	X	X	X		X
Boston	X	X	X / X	X		
Los Angeles	X		X	X	X	
Dallas	X	X	X / X	X		
Atlanta	X	X	X	X		
Minneapolis	X		X / X	X		
*Denotes that zero tolerance is espoused in the policy, which was considered as language geared towards deterrence. **Signifies health (mental and physical), physical examination or fitness-for-duty examination language was noted in the policy.						

Table 9. Individual Departmental Policy Purposes

With the exception of the Los Angeles policy, which states, “The Department cannot afford to assume the liability for its members to work while under the influence of any alcohol,” (Los Angeles Fire Department, 1989), none of the other policies plainly asserts liability as one of its purposes for having a substance policy. As indicated in the chart above, detection, rehabilitation and health, and public safety, emerged as the principal reasons these policies exist. They are less interested just in liability than might be suspected at the outset. The departments are more interested in protecting the people they have invested in through detection and rehabilitation and health to preserve the fire service’s primary objective, public safety.

c. Prevailing Guidance

None of the departments uses a city policy alone, although concordance between the fire agency, and other municipal guidance and language, does exist. For instance, Seattle references the city’s CDL to establish cutoff levels for its firefighters, as does Arlington County. Boston’s policy conditions exist within an appendix in the fire union contract. Dallas’ directive echoes the City of Dallas’ substance testing policies. Atlanta,

on the other hand, refers to the city's policy but maintains its own policy. The City of Minneapolis generates substance-testing language for all city employees including firefighters, which is incorporated in the firefighter's union contract.

2. Terminology

As a baseline, it is important to reconcile jargon used in all the policies. The range of wording and phrasing choices, such as those identified in this sub-theme, demonstrates each fire department constructing policies unique to its needs but adds to the breadth of inconsistency among them.

a. Type of Guidance

Four kinds of designations for substance testing emerged during the analysis. A “policy” is a definite course or method of action selected from among alternatives, and in light of given conditions, to guide and determine present and future decisions (Merriam-Webster Dictionary, n.d.e.). DC Fire & EMS, Seattle, FDNY, Arlington County, Boston, Atlanta, and Minneapolis use the word “policy,” which was the term used by most of the departments, although the primary type of testing they employed varied. A “general order,” often used in military and paramilitary organizations, is a “permanent instruction issued in order form that applies to all members of a command and is usually concerned with matters of policy or administration” (Free Dictionary, The, n.d.a.). Chicago's policy is named a “general order,” while Austin and San Antonio use the dual titling of “general order/policy.” These three departments also conduct the stricter method of testing—random testing. An “established or accepted series of actions that are done in a certain way or order” describes a “procedure,” which is the term Los Angeles uses to call its reasonable suspicion testing (Merriam-Webster Dictionary, n.d.g.). Finally, Dallas uses the term “administrative directive.” A “directive” is “something that serves to direct, guide, and usually impel toward, an action or goal” (Merriam-Webster Dictionary, n.d.a.). The significance of the semantic distinctions among these four words beyond their meanings is the inference of action and processes versus intent and inclusiveness. Directive, procedure, and policy all involve a way of doing something or an action. A

general order establishes permanency and precedence, includes all members, and encompasses the action described in the other terms.

b. Acknowledgement

The departments publish the guidelines as policies, procedures, or directives, and hold employees responsible for knowing the doctrine specifics. Some departments require employees to sign a form acknowledging receipt and understanding of the substance policy. The use of the acknowledgement does not correlate with departments that primarily use random or reasonable suspicion testing, which are DC Fire & EMS, Chicago, FDNY, San Antonio, Boston, and Atlanta. Departments that require their employees to acknowledge the department's policy are San Antonio and Atlanta. Minneapolis requests that before requiring an employee to undergo substance testing, the employer shall provide the individual with a form on which to acknowledge that the individual has seen a copy of the employer's substance testing policy. This request may not be a significant factor beyond notifying the employee of the policy, although the DOL does recommend doing so as part of a five-part program. It would be useful to know whether this acceptance is of importance to a fire department, and if so, why. Otherwise, without knowing this stance, this aspect of the analysis purely becomes yet another incidental variance between the policies.

c. Who Is Covered

Four general terms describe who the policies were intended to cover. The term "uniformed or sworn" is used by Chicago, FDNY, Austin, San Antonio, Dallas, and Atlanta. This term applies to anyone who has taken the oath to become a sworn firefighter or who wears the uniform of a fire department in the performance of their duty in an official capacity. DC Fire & EMS was the only policy that used the labels "covered and non-covered." Its policy gives the impression that those not covered under some type of collective bargaining language but who work for or with DC Fire & EMS in a support role (i.e., intervention services, vehicle maintenance and repair, medical or clinical services, etc.) are expected to comply with their policy.

An “employee” is “a person who works for another person or for a company for wages or a salary.” (Merriam-Webster Dictionary, n.d.c.). DC Fire & EMS also uses “employee,” as does Seattle, Arlington County, and Minneapolis along with San Antonio, Dallas, and Atlanta that use both “employee and uniformed or sworn.” “Uniformed and sworn” are described above. The use of the term employee is a direct tie to congruent city and county language, which covers all persons conducting business for a wage. Boston and Los Angeles use “member.” A “member” is defined as “someone or something that belongs to or is a part of a group or an organization.” (Merriam-Webster Dictionary, n.d.d.).

A couple of noteworthy considerations surfaced from the use of these terms. A distinction is seen between whether the responsibility of adherence to the policy is meant for all city and county workers, or purely for those with emergency response duties, and those affiliated with the fire department. Also, the perception of the policy was raised—whether it is meant only for fire and other first responders. Or, if stricter tenets can be applied to these agencies, which was noted in the Dallas policy because of its first responder roles, position specific responsibilities, such as CDL, as in DC Fire & EMS, Seattle, and Arlington County, for motor vehicle accidents, and as a condition of employment, such as in Atlanta’s policy.

d. Type of Substance(s)

Although every policy covers alcohol, none uses the same substance name, compound, or derivative to indicate the type of substance that employees would be tested for. Tables 10 and 11 illustrate the differences.

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
Cocaine	Anabolic steroids	Marijuana	Methadone	Not specified in the policy	Marijuana
Marijuana	Amphetamines	Cocaine	Opiates		Cocaine
Phencyclidine (PCP)	Barbiturates	Opiates	6MAM Heroin		Opiates
Opiates w/an expanded opiate panel	Benzodiazepines	Amphetamines	Cocaine		Amphetamines
Amphetamines	Cocaine Metabolites	Phencyclidine (PCP)	Barbiturates		Phencyclidine (PCP)
Benzodiazepines	Marijuana metabolites		Benzodiazepine		Narcotics
Methadone	MDA / MDMR		Darvon		Muscle Relaxants
Propoxyphene	Methadone		Phencyclidine (PCP)		Sedatives such as:
Barbiturates	Opiates		Amphetamines		Benzodiazepine
Quaaludes and their derivatives	Phencyclidine		THC		Barbiturates
Alcohol	Propoxyphene		Methaqualone		Anti-convulsants & Psychiatric Medications
	Alcohol	Alcohol	Alcohol	Alcohol	Alcohol

Table 10. Types of Substances Tested for (DC Fire & EMS, Chicago, Seattle, FDNY, Arlington, Austin)

San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
Marijuana metabolites	Five drugs, classes of drugs and their metabolites	Marijuana	Marijuana	Marijuana	Amphetamines
Cocaine metabolites	Marijuana	Cocaine	Metabolite	Cocaine	Methamphetamine
Opiate metabolites	Cocaine	Heroin	Hashish	Heroin	Barbiturates
a. Morphine	Opiates	MDMA	Cocaine	Any derivative	Benzodiazepines
b. Codeine	Phencyclidine (PCP)	Methamphetamine	Heroin	Any other dangerous	Cocaine metabolites
c. 6-Acetylmorphine	Amphetamines	Barbiturates	Morphine	or controlled substance as defined by federal or GA law.	Opiate metabolites: 1) Morphine 2) Codeine
Phencyclidine (PCP)	Anabolic steroids	Anabolic steroids	Codeine	Legal drugs and	PCP (Phencyclidine)
Amphetamines	Valium		Opiates	other substances which may impair an EE	Marijuana metabolites
a. Amphetamines	Morphine		Phencyclidine (PCP)		LSD (Lysergic Acid Diethylamide)
b. Methamphetamines	MDA		Amphetamines		3, 4-Methylenedioxy
Methadone, methaqualone, anabolic steroids	Fentanyl, airplane glue		Barbiturates, Methamphetamine, Hallucinogens		Amphetamine (MDA)
Alcohol	Alcohol	Alcohol	Alcohol	Alcohol	Alcohol

Table 11. Types of Substances Tested for (San Antonio, Boston, Los Angeles, Dallas, Atlanta, Minneapolis)

Distinctive drug classification differences are noticeable in the chart. For example, the chart indicates that every department with the exception of Arlington County tests for the five primary groups of classified drugs (amphetamines, cocaine, marijuana, opiates, and phencyclidine) for which the DOT tests. Although the same name or term is not used for these substances, and although not all the departments indicate that the DOT is the standard they use to guide their policy, they are represented. Every policy indicated that alcohol would be tested for. Department distinctiveness was shown with the insertion of other substances not covered in the DOT.

Substances, such as anabolic steroids, fentanyl, barbiturates/Quaaludes, benzodiazepines, Darvon, methaqualone, propoxephene, and Valium, were specified in the policies in addition to other, more recognizable, terms. However, beyond the notation, no explanation for the inclusion of these substances was given. Non-DOT language allows for the addition of these categories of substances and is obviously a concern for the departments that selected them. Anabolic steroids are known to have adverse effects on mood and increased aggressive behavior. Fentanyl is a narcotic pain reliever. Darvocet/Darvon (used interchangeably) are prescription, non-narcotic pain medications whose use could signify other underlying issues relating to an injury that a firefighter sustained either on or off duty. Propoxephene is the chemical found in Darvocet. Benzodiazepines are sleep aids. Barbiturates/Quaaludes are for long-term neurological problems and not useful for those seeking to alter their mood. Airplane glue and other huffing substances are not commonly tested for, even though they are being used with increased frequency, because they have a short half-life. Testing would have to be conducted while the person is using and the process is prohibitively expensive.

The effects of the five DOT categories are known to have damaging and addictive effects on the human body. The non-DOT categories, which can be many and varying as can be their effects, can be used for any number of reasons that could impair a firefighter's ability to safely, cognitively, and coherently, perform their duties. Departments that seek to deter the use of these substances need to be aware of and adapt to the ever-changing state of substance availability, the introduction of new substances, or new ways of introducing them into the body, their effects on the human body, and what

risks they pose to firefighters. Substances for mood alteration, aggressive behavior, injury pain management, sleeping aids, and neurological problems in addition to quick acting huffing substances are counter-intuitive to the fire service's role, are dangerous, and increase the risk to firefighters and the public.

Atlanta addresses this matter by including any other dangerous or controlled substances as defined by federal law or Georgia Law, and legal drugs and other substances that may impair an employee (City of Atlanta, 2007). Arlington County does not mention or restrict itself to any specific detection category. Both departments are located in right-to-work states and are permitted to make changes at will. Otherwise—and beyond the DOT categories, which all but one department lists—a pattern of selected substances could not be determined.

e. Behavioral Violations

Wording that indicated violation of the policies ranged from “indication” to “possession.” The most commonly used terms were possession, sale, trade, delivery, positive presence, transport, purchase, distribution, food, paraphernalia, non-drug, manufacture, dispensation, arrest, conviction, and under the influence. FDNY, Austin, Boston, and Minneapolis use most of these terms. Chicago, Seattle, Arlington County, San Antonio, Dallas, and Atlanta use approximately half of them. Departments using the fewest of these terms are DC Fire & EMS and Los Angeles.

Words like “possession” (the crime of having something on one's person that is illegal), “sale” (the act of selling something), “trade” (the act of exchanging one thing for another), and “distribution” (the act of giving or delivering something to people) draw criminality into substance testing policies (Merriam-Webster Dictionary, n.d.f; Merriam-Webster Dictionary, n.d.h.; Merriam-Webster Dictionary, n.d.i.; Merriam-Webster Dictionary, n.d.b.). Drug testing is designed to answer the question of use of a certain substance. It cannot speak to any of these other things, and if no accompanying policies do not address them—regular locker and bag searches, etc.—then it is empty language apparently just meant to cover loopholes in the case of an investigation or lawsuit, and to address general criminal behavior.

f. Manner of Substance Entry

The manner or mode of entry into the body was phrased variously throughout the policies. Of the eight departments that perform random testing, two (Chicago and Dallas) used the same nomenclature—the only difference being syntactical. The following are an itemization of the terms used by the departments.

Ingestion—DC Fire & EMS, Chicago, FDNY, Los Angeles, and Dallas

Inhalation—Chicago, FDNY, and Dallas

Injection—Chicago, FDNY, and Dallas

Possession—DC Fire & EMS

Thought to be in the body—Seattle

To determine if in the system—Arlington County

Indication—Austin

In the employee's body—San Antonio

Use, misuse and may be involved in the use—Boston

Under the influence—Los Angeles and Minneapolis

Any influence—Atlanta

The policies that use terms, such as “ingestion,” “inhalation” and “injection,” are covering the usual methods by which substance are used and introduced into a person's system. These terms represent familiar terms associated with substance use and coincide with departments that use the stricter form of substance testing, except Los Angeles. By using such plain terms, departments keep the language familiar and less ambiguous. “Possession,” “use,” “misuse” and “may be involved in the use of” become an extension of the three previously mention terms but they circle back to the criminal aspect of the “behavioral violations” theme. Similarly, these terms or phrases do not align with the department substance-testing policies with less prohibitive language: “thought to be in the body,” “to determine if in the system,” “indication,” “in the employee's body,” “under the influence,” and “any influence” are terms that rely on behavioral indicators that could or should initiate reasonable suspicion testing. In fact, the majority of the departments that use these words are conducting this type of testing. Notably, the policies that mention zero tolerance (Austin and San Antonio) or are in right-to-work states (Arlington County and Atlanta) use vague terms when describing how a substance enters

the body. An advantage or disadvantage in using any of these terms does not seem apparent. Subsequently, given the dissimilar language choices these departments use for describing entry, it does not matter how a substance got into a firefighter's system only that it is present. By using candid language of this kind, yet another area of deviation can bring policies in line with one another.

g. Right-to-Work States

Right-to-work laws forbid unions and employers to enter into agreements requiring employees to join a union and pay dues and fees to it to obtain or keep a job; 21 states, mostly in the south and west, have right-to-work laws (Free Legal Dictionary, The, 2014). Arlington County Fire Department located in Virginia, and Atlanta Fire Department in Georgia, operate in right-to-work states. This peculiarity prevents these agencies' members from establishing collective agreement language that influences substance policy or from creating a forum of protection for employees.

This sub-theme sets two departments (Arlington County and Atlanta) apart from the rest in this analysis. Conspicuous representation and employment protection-based differences afforded a firefighter employed in a unionized department may not be apparent to a firefighter who has not been employed on such a department. By making the substance policy a blatant condition of employment, Atlanta swiftly handles these matters by releasing from employment any firefighter found in violation of the policy. Also, firefighters in these organizations are not able to voice their support or rejection in the form of a vote. Firefighters in agencies like Arlington County and Atlanta are subject to whatever language the governing body in a right-to-work state uses within the framework of acceptable workplace laws.

h. Allowable Substance Use Accepted Timeframes

Timeframes that indicate acceptable periods of time for use, occurrence, or behavior prior to a firefighter reporting to work are discussed in this category (see Table 12). Eight of the 12 policies did not designate a specific timeframe in which an individual could engage or indulge in recreational or casual use, or consumption of substances,

before reporting to work or beginning a duty tour.²¹ Of the remaining four policies, three gave time frames of within four hours (DC Fire & EMS), 24–72 hours (FDNY), and 30 days (Chicago). One (Arlington County) policy’s language has “prior to work” as the period duration for use preceding the workday. The Seattle policy specifies that alcohol will not be consumed within eight hours of performing safety sensitive duty.

Establishing a timeframe for prior use of substances is a direct contradiction to the intent of a substance policy, especially since Austin and San Antonio assert “zero-tolerance” in their policies. Also, as mentioned in the motivations sub-theme, seven departments place emphasis on a substance-free workforce and work environment.²² In addition, as is illustrated in Table 9 in the purpose sub-theme, public safety and liability emerged to further support the contradictory notion of established prior use language given that every policy named public safety as one of its purposes for having a substance testing policy. One (Los Angeles) carries the precept further by mentioning the department’s inability to accept the liabilities associated regarding its employees working while under the influence of alcohol. These timeframes undermine both the intent and the reasonable application or enforcement of the policy.

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
w/i 4 hrs prior to duty	within the previous 30 days	alcohol - w/i 8 hrs. of performing safety sensitive duty	24 - 72 hrs	prior to work	Specific time not given
San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
Specific time not given	Specific time not given	Specific time not given	Specific time not given	Specific time not given	Specific time not given

Table 12. Prior Use Language by Department

²¹ Arlington County, Austin, San Antonio, Boston, Los Angeles, Dallas, Atlanta, and Minneapolis.

²² Arlington County, Austin, San Antonio, Los Angeles, Dallas, Atlanta, and Minneapolis.

i. On-Duty and Off-Duty Conduct

The policies unanimously forbade any on-duty or in-workplace violations of their substance use policy (see Table 13). However, not every department clearly forbids off-duty conduct in violation of its policy. The DC Fire & EMS policy mentions “pre-duty,” which its prior use period defines as within four hours prior to duty. San Antonio and Boston policies indicate that conduct “in the workplace” also violates their policy. The San Antonio, DC Fire & EMS, Seattle, and Los Angeles policies do not have off-duty conduct as a violation. Otherwise, Chicago, Boston, FDNY, Dallas, Arlington County, Atlanta, Austin, and Minneapolis all designate “off-duty” conduct as a violation of their substance testing policies should what a firefighter has done during these periods be detected during testing.

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
Pre & On duty	On & Off Duty	On duty	On & Off Duty	On & Off Duty	On & Off Duty
San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
On duty or in the workplace	On duty, off duty & in the workplace	On duty	On & Off duty	On & Off duty	On & Off duty

Table 13. Conduct Covered by Department

j. Zero-Tolerance

Zero-tolerance is defined as the policy or practice of not tolerating undesirable behavior, such as violence or substance use, especially in the automatic imposition of severe penalties for first offenses (Free Dictionary, The, n.d.b.). Such extreme intolerance for these behaviors was not found during this analysis, with motor vehicle accidents in San Antonio being the only exception. Only two (Austin and San Antonio) policies mentioned, “zero-tolerance.” However, they both neglect to cite plainly off-duty/prior use in the policy language. Also, given that fire chiefs have “discretionary authority in final determinations,” another allowance has been added to weaken the term. The policies that mention zero-tolerance do not specify what they are seeking to achieve with regard to this term. In doing so, they fail to distinguish “zero” as “zero substances” and “zero” as “zero chances,” which has proposes and produces conflicting effects in their policy objectives.

It is unconvincing that “zero tolerance” exists given the multiple chances afforded firefighters to redeem their actions and if thresholds are anything but zero.

3. Cause or Impetus for Testing

a. Reasonable Suspicion Testing

At a minimum, all 12 departments employ reasonable suspicion substance testing as a method to guard against substance use among firefighters. Reasonable suspicion testing is based on specific personal observations that a supervisor, with the concurrence of another supervisor of equal or higher rank, can describe concerning the appearance, behavior, speech, or breath odor of an employee. Reasonable suspicion testing was consistently applied or listed as an option in all policies. Since the majority of the departments currently use random testing, and evidence of consistency exists in the use of reasonable suspicion testing, stricter testing enforcement throughout the fire service appears to be emerging. A much deeper reason beyond this analysis must exist that is preventing other or every fire department from operating similarly.

b. Command Authority Decision

The number of employees selected for testing was only similar when reasonable suspicion substance testing was the method, which meant that a firefighter was selected based on behavioral indicators outlined in the policy. Yet, the person who makes the determination if a firefighter should be tested under the reasonable suspicion criterion contrasts from policy to policy. Only the Minneapolis policy mentioned the employer (the department or an administrative body) as having the authority to order reasonable suspicion testing. It also delegates this authority to any supervisor (one that supervises), as does Los Angeles, Atlanta, Arlington County, San Antonio, and Boston, to recognize the behaviors that should prompt reasonable suspicion testing and start the process but not the authorization to have it performed.

In several instances, secondary confirmation was required, such as in the DC Fire & EMS, Chicago, Seattle, Austin, FDNY, San Antonio, and Boston. Immediate supervisors or managers, after conferring with another officer or Battalion Fire Chief, can

refer someone for reasonable suspicion in DC Fire & EMS. It requires two supervisors in Chicago, one of whom has to be a chief officer of exempt rank, and the rank of Battalion Chief or higher makes the decision in Seattle. A chief officer and one other person only at direction of a shift commander, assistant chief or the fire chief can perform this task in Austin. FDNY allows every member of the department to report someone suspected of reasonable suspicion to the officer on-duty at the location of the violation. Boston assigns the final determination to the duty deputy chief.

Two policies assign the authority but with added stipulations: San Antonio, where any supervisor could refer someone but the suspicion had to be in writing and forwarded directly to the fire chief, and a motor vehicle accident will prompt reasonable suspicion testing in Dallas.

c. Justifiable Cause

Instances that trigger substance testing apart from a department's usual method varies across the department policies and does not correlate with a department's regular testing mode. The employment of substance testing for a duty injury, arrest or conviction, pre-certification, returning from extended absences or leaves, post treatment or rehab, and as a requirement of a position, was found across all policies to some extent.

Half of the departments (DC Fire & EMS, Chicago, FDNY, Arlington County, Austin, and Boston) test during an annual physical, fitness for duty or promotional medical assessment. Other events that prompt substance testing are arrests and convictions for sale, transfer, delivery, distribution, manufacture, possession, dispensation, driving under the influence (DUI) or while intoxicated (DWI), and repeat or flagrant violations of rules and regulations.

Since prescription drug addiction may originate from pain management associated with an on-the-job injury, then post injury testing may also merit greater attention given the addictive nature of these medicines and the epidemic rate at which the general population is abusing these substances. The DC Fire & EMS, Chicago, Seattle, FDNY, Austin, San Antonio, Boston, Dallas, and Minneapolis policies indicate that they test for prescription medicines.

Reasonable conclusions can thus be drawn that random testing would encompass these instances, as well as act to further deter substance use. A connection could not be drawn that would link these sort of events to one specific type of testing—either reasonable suspicion or random testing.

d. Random Testing

Random substance testing is testing conducted on an employee at an unspecified time to determine whether the employee has used substance(s) in violation of a policy that prohibits such behavior. Eight of the 12 departments use some variation of random substance testing.²³ Of the departments that utilize random testing, one (Atlanta) does not assign a number of employees to be tested.

e. Selection Criteria

This criterion refers to whom or what method decides when an individual, workgroup or unit will be selected to provide specimens for testing (see Table 14). Five of the eight departments that conduct random testing use third-party or contract agencies to select firefighters.²⁴ They use computer-generated random number or employee selection. In other words, they remove the possibility of human motives or discriminatory bias from the selection process. Three of the eight departments using random testing have internal divisions or units that select firefighters for substance tests and they also use computer-generated selection.²⁵

The selection of firefighters for testing has a trust element similar to that associated with specimen collection locations and testing facilities. Using an internal or external group to select firefighters can create a trust dichotomy. On one hand, it may remove bias, and on the other, it may create it depending on the firefighter selected, the department culture, and the outside group's reputation.

²³ DC Fire & EMS, Chicago, FDNY, Austin, San Antonio, Boston, Dallas, and Atlanta.

²⁴ Chicago, Austin, San Antonio, Boston, and Dallas.

²⁵ DC Fire & EMS, FDNY, and Atlanta.

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
DC Fire & EMS HR / computer generated	Outside consultant / computer program	Supervisor / confirmed by a BC or higher	Management Analysis and Planning Unit (MAP) computer generated	Supervisor	Third party collection site using random # generator
San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
The Vendor - non- discriminatory statistical computer program	The third party Contractor using a computer random number selection method	Supervisor	Contract firm	Office of Professional Standards	Supervisor

Table 14. Who Makes the Selection by Department

4. Testing Protocols

a. How Many

The number or percentage of employees tested in total or at a time fluctuated between departments. A few policies used a percentage of the department's total active force at a certain time during the year. The percentages used for the policies analyzed were 15 percent, 20 percent, 25 percent, and 50 percent (see Table 15). The number of individuals ranged from no more than twenty to whole work groups, which meant the number of firefighters being tested most likely fluctuated when testing was conducted.

Absent any other obvious explanation, variations in the number of firefighters a department tests stem from either the flexibility to build an individual program or the DOT annual minimum substance random testing rates established within DOT agencies and the U.S. Coast Guard, which range from 25 percent–50 percent for drug testing and 10 percent for alcohol testing (Random Testing Rates, 2014).

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
minimum of 20% of the dept. thru out the yr. (1st day of each qtr.)	no more than 20 & no more than on a daily basis	Direct, first hand observation - appearance, behavior, speech &/or odor	Five (5) units selected each day of testing. 1-primary and 4 alternates	Behavioral indicators	up to 25% of FFRs in the department / new list submitted to the dept. monthly
San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
15% of employees each calendar year	equal to 50% of total # of employees as of July 1	Objective facts or observation, more than a mere suspicion	2 - 50 (work group size) at any given time	No # given - for general fund depts. when funding has been allocated in the annual operating budget	Specific facts and rational inferences drawn from those facts

Table 15. Number of Employees Tested by Department

b. When

Times for a donor to present for testing once they have been notified that they have been selected for random testing range from two to eight hours to provide or produce an adequate sample for testing. Departments are allowed the flexibility to build their programs to meet their specific needs. However, cursory glances at this theme raise concerns that seem to undermine the integrity of an organization's testing policy. Inconsistency in time ranges to provide a specimen can raise suspicions that firefighters may use such time allotments to engage in behaviors that adulterate their sample or involve them in other poor behavior to obstruct or evade the testing process.

c. What

The most significant difference between the policies was the levels, chemical, and concentration/threshold amounts that violated the policy (see Table 16).

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
0.02	0.04	.02 or .04 not in the policy in other doc	0.05	0.04	0.08 (Texas Penal Code)
San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
0.04	0.04	0.01 - 0.08	0.00	0.02	FFRs 0.02 / FCs 0.05

Table 16. Alcohol Concentration Levels by Department

d. Alcohol

Every substance policy warned that alcohol would be tested for, although the levels varied. BAC levels obtained by using a Breathalyzer ranged from .01 to .08, which presented another inconsistency across departments.

Notably, four departments (Seattle, Los Angeles, Austin, and Minneapolis) have other provisions associated with the BAC noted in their policies.

For Seattle, a BAC of .02 is legally drunk, which can affect the status of a CDL that some on the department are required to maintain. A BAC of .04 is a violation of DOT—49 CFR Part 40 and a report must be filed with the Washington State DOL (City of Seattle, 2011; Woods, n.d.).

In the Los Angeles policy, California state law establishes a BAC level of .08 as the level at which a vehicle operator is presumed under the influence of alcohol. A vehicle operator may still be found guilty of being under the influence with a level between .01 percent and .08 percent. Therefore, department members will be considered impaired and unable to perform their duties in a safe manner if an alcohol level is at a level of .01 percent (Los Angeles Fire Department, 1989).

According to the Austin policy, intoxicated/under the influence is having a blood alcohol concentration of .08 or more, where “alcohol concentration” has the meaning assigned to it in Texas Penal Code Ann.49.01 or not having the normal use of mental or physical faculties by reason of the introduction of one or a combination of two or more substances, or any other substance into the body (Austin Fire Department, 2010a).

In the Minneapolis policy, different BACs are listed for firefighters (.02) and fire chiefs (.05). The policy contained in the firefighters and fire chiefs union contracts, which is the city’s policy, does not indicate the reason for the difference (Minneapolis Fire Department, 2008).

e. Drugs

Except for two policies (Arlington County and Los Angeles), amphetamines, cocaine, marijuana, opiates, and phencyclidine, which comprise the five classifications of drugs for which the DOT test panel tests, were identified as substances for which the agency would have a specimen screened. In addition to these five classifications of drugs, numerous other substances were listed in all the department policies, with the exception of one. No chemicals were specified in the Arlington County policy.

Five policies (Chicago, Seattle, FDNY, San Antonio, and Minneapolis) contained charts that indicated the substance the agency tested for, the initial test cutoff levels, and the confirmatory cutoff levels for drugs—none of the charts was the same.

Two regulatory documents were identified as a department's choice of guidance for substances a department attempts to have detected—DOT 49 CFR Part 40 and DHHS. The DOT regulates the transportation industry and DHHS regulates non-transportation industries. Four departments (FDNY, Arlington County, Los Angeles, and Atlanta) do not name the regulatory document that influences their policy.

Flexibility to construct an individual policy should not permit different levels and thresholds. Since this theme may be driven more by state and local edicts than organizational preference, it serves more as another example of divergence worthy of attention and one that may not be skirted. Alcohol is a legal substance. In 2000, Congress passed the DOT Appropriations Act of FY 2001, adopting .08 BAC as the national illegal limit for impaired driving (Traffic Safety Facts, 2004). None of the policies permits or tolerates a BAC above that threshold. However, instances of modified strictness and position-specific requisites result in different BACs among the policies. As for the substance concentrations and thresholds, the DOT has recognized minimums for the five categories of drugs for which the DOT certified laboratories test a specimen. The addition of other substances and thresholds, which may be viewed as stricter enforcement, uses the non-DOT approach but places emphasis on divergence of processes rather than uniformity and permits employer with an unfair advantage of making substance alterations at will. These processes, as well as other aspects of policy conflicts, must be considered to reduce or eliminate the policy gaps that currently exist.

f. Where/Testing Locale

The facility at which substance testing specimens are collected and testing is conducted are important as these guidelines establish the chain of events that lead to a non-negative or negative result on a substance test (see Table 17).

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
Internal (PFC)	Internal (RDATU) or designated laboratory	Appropriate collection / testing site	licensed by the New York State Dept. of Health	The County by trained & qual. Personnel	Third party collection site
San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
Vendor - company under contract w/the city	independent third party contractor / SAMSHA certified lab	Third party laboratory (Quest Diagnostic)	Contract laboratory	2 testing facilities (Caduceus Occ. Health)	Not owned or operated by the City of Minneapolis

Table 17. Testing Facilities Used by Department

Of the 12 departments, only one had its own internal medical facility that collects specimens for testing—DC Fire & EMS. The others use a third party vendor, a contract facility, or had a unit that would deliver the specimens to an authorized and certified facility. Los Angeles and Atlanta named specific clinics to which firefighters were to report for collection and testing. The significance of these testing facilities lies in issues of trust, structure and resource (fiscal and staffing) availability and sustainability: Trust that a third party or an internal unit will conduct specimen testing adequately and trust amongst fire personnel to the same. The organization's structural ability, appropriate monies, and personnel to facilitate substance specimen collection and testing define in its abilities to sustain such an effort. An untrustworthy system incapable of facilitating proper collection and testing of specimens is neither sustainable nor worthwhile.

5. Administrative Differences

None of the departments has its own certified laboratory to perform forensic testing of specimens. However, two (DC Fire & EMS and Chicago) departments had sworn members of an administrative unit managing specimen collection for testing. In other departments, third-party certified contractors performed the collection task.

Allowing sworn members to administer testing could cause friction, mistrust, and suspicion amongst firefighters. Third-party vendors can remove some, if not all, these suspicions. This theme draws on the comparative costs of maintaining and operating an

internal collection facility, or administrative unit and contracting the services out, and which of the two options can be afforded, is preferable, and able to be sustained.

a. Level of Commitment

Departments that conduct random testing demonstrate a stricter devotion to prevent, detect, and deter substance use among their firefighters. They have secured funding through in their budgetary process, have administrative personnel, staffing, and facilities resources to accommodate the endeavor and have managed to have substance language incorporated into union language, which shows the level of concern firefighters have for the matter and demonstrates firefighters caring for their own.

b. Funding

Substance testing for individuals or large groups is a financial undertaking that requires committed apportioning of monies to maintain and sustain the effort. Budget and funding are not mentioned in 11 of the 12 policies. However, the matter of money is significant as maintaining a testing unit/division/facility or contracting the service out has associated costs.

Only one of the policies outright mentions funding in its language. The Atlanta policy states that the random testing of firefighters would depend on the allocation of funds to operating budgets of general fund departments, which this department is. Thus, firefighters employed in this particular fire department do not know from year to year if random substance testing will be performed until the fire department budget is approved and monies for substance testing are available. Departments that test occasionally using reasonable suspicion, pre-employment, and post-accident may only incur sporadic expenses related to conducting substance testing.

Although data collection for additional budgetary information was not conducted during this policy analysis, it appears that in departments that conduct random testing and are not regulated by funding retractions or fluctuations, broad support and commitment exists for the substance testing of firefighters or those in safety-sensitive positions. Otherwise, the funding simply would not be put to this use.

c. Staffing

To dedicate personnel to staff a facility or have a role in substance testing is also an expression of commitment. Three department policies mention a facility or unit of personnel directly involved with their substance testing process. DC Fire & EMS has a police and fire clinic, FDNY references a management analysis and planning unit and a compliance unit, and Atlanta names its Office of Professional Standards as having participating roles or performing certain responsibilities in substance policy procedures.

d. Support

Ten departments have and provide collective bargaining language for the analysis.²⁶ Of those 10, seven contain language repeating or confirming the existing of a substance testing policy.²⁷ The terms “repeating or confirming” are used because DC Fire & EMS, Seattle, San Antonio, and Minneapolis policies mention a mutually agreed commitment to the policy. Wording in Boston’s policy offers that the department and the fire union maintain an employee assistance program but no mention of shared commitment. Dallas provides a “meet and confer” document that contains union language but does not include language about substance use or testing. Three collective bargaining agreements do not mention substances and the other two are located in right-to-work states and do not have unions.²⁸ A statement or act of this kind lends support to an administration’s substance testing policy enforcement.

6. Employee Treatment

The disposition of firefighters before and after they have been tested for substances is a difficult matter for any fire department (see Table 18).

²⁶ DC Fire & EMS, Chicago, Seattle, FDNY, Austin, San Antonio, Boston, Los Angeles, Dallas, and Minneapolis.

²⁷ DC Fire & EMS, Chicago, Seattle, Austin, San Antonio, Boston, and Minneapolis.

²⁸ FDNY, Los Angeles, and Dallas and Arlington County and Atlanta.

DC Fire & EMS	Chicago	Seattle	FDNY	Arlington	Austin
Removed from duty for 24 hrs.	Relieved of duty and put on admin leave w/pay pending review	Immediately removed from work assignment	Prohibit (on and off-duty) from leaving premises w/o permission, relieve the on-duty from duty	Other duties or administrative leave	Returned to duty or Admin leave
San Antonio	Boston	Los Angeles	Dallas	Atlanta	Minneapolis
Returned to duty or Admin leave	Returned to tour (duty) or admin leave	Not left alone and not allowed to respond	Relieved from duty, returned to work or admin leave w/o pay	Removed from duty upon receipt of a positive result	Provide the employee with a form to acknowledge the policy and consent to testing

Table 18. Immediate Disposition of FFR by Department

Equally pressing, maybe even more so, is what should be done with them while awaiting the results of their screening. The analysis revealed a wide range of actions taken by a department while awaiting test results or after test results have been received. Six departments remove the firefighter from duty.²⁹ Administrative leave is also employed as an option by six departments.³⁰ Assigning the firefighter to other duties, not allowing them to leave the premises, and not leaving the individual alone are some of the other types of dispositions departments use. DC Fire & EMS and Seattle only provide one option, which is to remove the firefighter from duty. While awaiting test results, five departments assign other duties or return the firefighter to duty.³¹ If the seven other departments act in a similar manner, it was not conveyed or found in their policies. Regardless of the firefighter's before and after disposition, a department loses or could lose a tremendous amount of time, or be a burden for those who test groups or units of firefighters.

Regardless of the firefighter's before and after disposition, this is or could be a tremendous amount of lost time for a department or burden for those that test groups or units of firefighters.

²⁹ DC Fire & EMS, Chicago, Seattle, FDNY, Los Angeles, and Dallas.

³⁰ Chicago, Arlington County, Austin, San Antonio, Boston, and Dallas.

³¹ Arlington County, Austin, San Antonio, Boston, and Minneapolis.

Whether a fire department relieves a firefighter from duty before or after a specimen collection has been made, speaks to the amount of liability it is willing and able to bear. The agency's assumption of responsibility regarding a firefighter's disposition correlates strongly to the essential day-to-day logistical demands of the department and its preferred program framework. For instance, reasonable suspicion testing of one person suspected of irregular behavior is far less intrusive operationally on a department than arranging for crews or groups of firefighters to be tested. Likewise, should a non-negative result be received for one firefighter, the department may easily be able to accommodate that firefighter's removal from duty. However, if a crew or group of firefighters must be removed, then an operational dilemma is created with deeper safety, cost, logistical, response and resource availability issues that must be planned for. Thus, fire departments that employ random testing, the stricter form of substance testing, can afford the particulars associated with it and have worked these factors into their day-to-day operations.

This theme correlates to the number of chances (as discussed further) a department is willing to give a firefighter after a non-negative result. However, beyond this, if a department does not terminate a firefighter after substances have been detected and fails to provide treatment, it assumes another layer of liability. That liability is buffered with the establishment of employee assistance and rehabilitation programs, which all 12 policies had, and addresses the treatment aspect that the DOT espouses.

a. EAP or Treatment

By providing employee assistance or admittance to rehabilitation, departments give firefighters who are using substances an opportunity to seek help in advance of the random selection process or reasonable suspicion, and after a non-negative result has been received.

If firefighters have indulged in prohibited behavior, they can self-disclose their indiscretion, voluntarily enter a rehabilitation program, or the department can impose rehabilitation. Every department but one, regardless of the number of chances a department permitted, offered some variation of employee assistance or rehabilitation.

These provisions were commonly found within each policy, with the exception of the Atlanta Fire Department.

Atlanta offers firefighters one chance to self-disclose or ask for assistance before they are tested. Otherwise, zero tolerance surfaced in a provocative statement found in the City of Atlanta's Substance Abuse Policy. It read, "The City of Atlanta program is concerned only with employees' compliance with City of Atlanta (COA) safety regulations, and not with preventive, diagnostic, therapeutic, rehabilitative, maintenance, or palliative care or the past, present, or future physical or mental health or condition of an individual" (City of Atlanta, 2007).

Each policy has language of some sort that encourages firefighters to self-report or voluntarily seek help. In some cases, employee assistance/rehabilitation program participation is a condition of continued employment or is required in lieu of discipline. Six policies provide rehabilitation in lieu of discipline.³² This theme builds on the on- and off-duty behavior and zero tolerance notion by incorporating assistance and rehabilitation into their policy language and is in line with the DOT substance abuse professional and employee assistance language. It also correlates to the reasons fire departments publish substance policies, as outline in the policy purpose sub-theme above.

b. Number of Chances

The kind and number of chances vary from department to department, to wit, various or alternative forms of disciplinary action, last chance agreements, recommendations for termination or termination/discharged/indefinite suspension, creating a rebuttable presumption subject to challenge through the grievance procedure and two offense limitations.

Atlanta is the only department policy that initiates action to terminate a firefighter found in violation of the policy one time. The Chicago, Seattle, and Austin policies indicate that one chance is given after a substance policy violation. DC Fire & EMS also seems to offer a chance by providing firefighters the opportunity to attend 45 days of

³² Chicago, Seattle, Austin, San Antonio, Dallas, and Minneapolis.

rehabilitation and then return to work but the policy makes no mention of how many chances it would permit. Los Angeles processes the individual according to department disciplinary procedures, which was not used or referenced as a part of this analysis. The FDNY, Arlington County, San Antonio, Boston, Dallas, and Minneapolis substance policy language give the impression that at least two chances to violate the policy are given.

7. Standards Difference

The legal aspect of policy design creates protection to safeguard against challenges and provides a more firm foundation upon which to craft the language. The laws, statutes, ordinances, regulations, and contractual syntax that guide the creation of these policies are derived from various local, state, and federal edicts that differed from policy to policy. Whether by necessity or a byproduct of smart design, the bedrock of any good policy is the strength and validity of the laws used in its construction. However, which one should be used or is guiding substance testing in the fire service is unclear at the conclusion of this analysis.

The standards difference can be broken down into national, state and local groupings:

Nationally, the DOT regulates the transportation industry and provides the most stringent guidelines for collecting specimens and conducting forensic testing, and includes CDL requirements. Non-DOT language, issued by the DHHS, guides private sector substance testing that allows employers the flexibility to test for additional substances beyond the five classifications found in the DOT, which are amphetamines, cocaine, marijuana, opiates, and phencyclidine. The Drug-Free Workplace Act maintains requirements for federal contract holders to maintain a substance-free work place and the Americans with Disabilities Act ensure those recovering from alcoholism and addiction are not discriminated against. Finally, the SAMHSA, within DHHS, establishes the scientific and technical guidelines for substance-testing facilities, and collection sites for federally regulated workplaces.

State laws governing BAC, substance laws, and under the influence or intoxication, had an influence on each of the policies in some form or another. A notable difference was found with the two policies from

Arlington County, Virginia, and Atlanta, Georgia. Both these agencies are located in right-to-work states, which do not allow unions. Therefore, no collective bargaining exists to either support or oppose substance language, and no union language exists to protect employee or ensure due process. In other words, the firefighters working in the fire departments work at the will of the employer and can be released at the employer's discretion, which is the case in Atlanta if a firefighter violates the city's and department's substance policy.

Locally, city or county—in the case of Arlington County, Virginia—substance policies directly influence a number of the fire department policies.³³ If not influenced directly by using the city's language, then indirectly because of the collective bargaining agreements that cities enter into with unions; seven of the policies reference the city's substance testing policy.³⁴ Since Arlington County and Atlanta Fire Departments are located in right-to-work states, they are governed by the terms of their respect city or county language. FDNY, Los Angeles, and Dallas union language does not contain or mention substance-testing policy. Union language can assuage firefighters' concern and anxiety about substance testing and provide a layer of representation and support for those caught in violation of the policy.

The assumption of liability for injuries, accidents, damage, and death caused by firefighters who has substances in their system must rest with someone. Firefighting is a dangerous occupation. Getting to incidents, performing at them, and returning from them all involve risk and the public, which could be endangered because of a firefighter's delinquent behavior. The Los Angeles Fire Department policy was the only policy that mentioned liability. It states, "The Department cannot afford to assume the liability for its members to work while under the influence of any alcohol" (Los Angeles Fire Department, 1989). However, it does not include the effects of controlled substances on its members in this proclamation.

³³ Seattle, Arlington County, Dallas, Atlanta, and Minneapolis.

³⁴ DC Fire & EMS, Chicago, Seattle, Austin, San Antonio, Boston, and Minneapolis.

VII. FINDINGS, RECOMMENDATIONS, AND CONCLUSION

This project set out to explore the status quo of substance-testing policies in the fire service. Although the sample set in this project was small (n=12), all the sample policies did have a substance-testing policy in place, and little reason exists to suspect that many, if any, fire agencies across the country do not have one.

Although certainty in this regard is outside the scope of this project, it seems reasonable also to conclude that the policies are all, despite their differences, functional, or even successful. Each one presumably discovers firefighters using substances, detects substances, and is operationally, administratively, fiscally, and legally tenable.

An “ideal” substance policy would be one that detects the widest range of substances, at the earliest time, at the least expense, with high accuracy and reliability, before an incident occurs or someone is hurt, in time to obtain treatment for the firefighters, rehabilitate them, and return them to service. Without the data to track such variables for each of the sample policies, it is impossible to say which ones are superior in any of these ways. Similarly, no one policy emerged in whole as a best practice or basis for a national model.

An early assumption in this project was that the strictest policies would be the most effective; that a “zero-tolerance” approach would ensure the lowest substance abuse levels. Only one example was found that resembled zero tolerance, in San Antonio, when a firefighter is involved in an on-duty motor vehicle accident. Again, without the data to understand if zero tolerance had ever been considered or attempted by these agencies, it is hard to speculate about why such a highly safety-conscious industry would not adhere to the strictest of standards in this matter. It must be inferred that the zero tolerance convention (swift, extreme penalties for first offenses) does not guarantee the elimination of substance use by firefighters or undesirable behaviors prohibited by policy. Zero tolerance may be neither cost-effective, legally defensible, or practical.

On the other hand, the assortment of tested substances, testing, and disciplinary procedures, and other policy elements, reflects a troubling inconsistency across the field

on an indisputably high-consequence issue. The advantage of a national model policy—of standards—would be to streamline substance testing policy language. It would take the burden from fire departments and enable them to use a federally recognized set of procedures as their guiding principle, thereby reducing confusion and ambiguity in individually drafted policies. In doing so, fire department substance policy would align with procedures that other safety-sensitive vocations—pilots, truck drivers, railroad and pipeline workers, etc.—are using for public safety purposes. Substance policy standardization would unify fire departments through nationally recognized procedures similar to other national standards. Such standardization would align fire departments with one another and build on existing fitness for duty criteria. Therefore, when multiple jurisdictions converge, they would know the substance-testing standard an assisting fire department adheres to, just as they have confidence in the type and level of training conducted in other agencies.

A. WHAT SHOULD A NATIONAL MODEL POLICY LOOK LIKE?

An ideal or “perfect” policy would test randomly, early, fast, accurately, inexpensively, and comprehensively, treat fairly and effectively, operate efficiently and with the lightest operational and logistical footprint. A standard already exists that, if implemented 100 percent, would achieve at least some of these topics, the DOT, CFR—Procedures for Transportation Workplace Drug and Alcohol Testing Programs (49 CFR Part 40).

1. Department of Transportation (DOT) Policy

The DOT policy includes or ensures randomization, forensic testing, confidentiality, laboratory certification, and quality assurance; certified MROS, licensed substance abuse professionals, and certification of collectors and collection sites as the basis of its doctrine. Standardization using the DOT regulation would introduce the highest quality of forensic testing, the highest number of firefighters to be tested and frequency of testing, and provide terminological consistency. The DOT tests for five categories of illegal substances (amphetamines, cocaine, marijuana, opiates, and phencyclidine). It also requires that firefighters self-disclose prescription medications for

validating within 72 hours of prescription. The breath alcohol concentration threshold under the DOT standard prohibits workers from safety sensitive work at 0.04 or greater. Detection of 0.02 requires stand down. A negative breath alcohol is required at the time the individual returns to duty.

The DOT regulations are public safety focused. The guideline identifies what is being tested for, when testing is to be done, how it is to be done, and why. A written policy identifying the parameters must be in place prior to commencing testing. Education of the employees to be tested, the front line supervisors and all direct contact management personnel, must be done prior to implementation. Written acknowledgement of understanding of the aforementioned, company policy process, procedure and consequences must be obtained from all prior to the first test being performed to ensure the integrity of the policy.

The DOT guideline is, in other words, the “gold standard” for substance testing. It was created to standardize prevention and detection of substance use within the transportation industry for safety-sensitive positions within air, rail, trucking, and the U.S. Coast Guard, pipeline, and nuclear management fields of operation. Substance testing of firefighters according to DOT would provide a proven policy and procedure. It is legally defensible, reduces risk to the agency, and safeguards public safety.

a. Not Covered by the DOT

What DOT does not cover is an important factor when merging ideas and practices from various substance policies. The DOT does not address processes specific to public safety not mandated by CFR 49 Part 40. It also does not cover the private sector. Many city or local jurisdictions can receive a waiver not to participate in the DOT. For example, fire trucks and city vehicles may meet the criteria for qualifying under the DOT but can be waived from the provisions.

Panel testing outside of the five chemicals tested for by the DOT is not covered. The DOT policy recommends a 5-panel, but it is possible to do 7-, 9-, or 10-panels as well, and that higher standards might be preferable or necessary for agencies or disciplines that have specific substance abuse patterns or safety requirements. Other

panels include additional groups of substances in addition to the 5-panel. Such panels are used in the private sector for a variety of occupations, generally, but not exclusively, the medical community, schools, warehouses, and the food industry. Creative departments may opt for a custom panel designed for specific reasons or specific groups of chemicals or personnel. Although additional substances are tested for by some of the departments, it is unclear which panel they use as none of the policies specifies it. Who is tested, the reason for testing, what substances are being sought, when testing will be done, how the results will be reported, and the consequences of a non-negative result, are constants that link the DOT and non-DOT.

b. Integrated Policy

Using agency information from the 12 policies as building blocks, a policy design that complements the DOT policy takes shape. First, although different terminology was used, each of the 12 policies clearly identified who would be tested, and using the two leading methods of substance testing, reasonable suspicion and random.

Second, simplifying the text of a substance testing policy removes extraneous language and directly conveys the rules. Making public safety the motivation and deterrence, the primary purpose narrows the goal of the policy to include firefighters and the public, and modifies the purpose to make substance avoidance the primary aim. In doing so, the image of the fire service and culpability are indirectly addressed, along with establishing that dissuasion from substance use is the leading purpose of the policy (as opposed to detection). It also addresses the reason for testing. Stressing that any on- and off-duty incidents involving substances use and law breaking of the same, will result in substance testing or disciplinary actions. This emphasis eliminates using excessive terminology to capture what is and is not acceptable or prohibited behavior.

Third, clearly stating whom the substance policy covers using simple terms makes it simple for those viewing the document. Using words like “all fire department personnel,” all sworn or uniformed firefighters,” “only members of a specific numbered collective bargaining unit,” etc. plainly establishes to whom the policy pertains.

Fourth, selecting the panel of substances to be tested for, and listing the substances contained in the panel, further informs those covered by the policy. At the discretion of or according to the needs of the agency, 7-, 9-, and 10- panel tests might be chosen instead of the DOT-recommended 5-panel,. As for alcohol, BAC limits, which varied across the sample policies, could be standardized from the DOT by using 0.04 as the cutoff and 0.02 to require down time. Another option regarding BAC would be to require, at a minimum, that all vehicle operators possess a CDL, which mandates these individuals adhere to the DOT BAC limits. Failure to do so creates costly penalties for the CDL operator.

With the exception of Arlington County, the policies did communicate what substances would be tested for although the panel they use was not indicated. However, only a few policies mentioned when and where testing would occur.

The fifth policy component required in a national standard would be the timeframe or frequency of testing; daily, weekly, monthly or quarterly, must be known, along with the location the individual should report to for testing. For example, the Los Angeles and Atlanta policies specifically named the third-party clinic that their donors were to report to for sample collection. DC Fire & EMS and FDNY have an internal clinic for fire and police or internal unit, respectively that collects specimens for testing. Identifying a collection site or clinic provides even more clarity for firefighters. Lastly, those affected by the policy should know how the results will be reported to the department and who has been designated to receive the results. The consequences of a non-negative result then need to be outlined as well.

To summarize, the combination of the strongest elements from the sample policies analyzed in this paper, with the DOT policy, would provide the basis for a model national substance and substance testing policy for the fire service. Such a policy would include the following components.

- Simplifying the text and standardizing the terminology
- Identifying public safety as the motivation and deterrence as the primary purpose, to include:

- Making substance avoidance the primary aim
- Firefighters and the public's safety the reason
- Incorporating the fire service image
- Recognizing liability as a factor
- Providing the rationale and triggers for testing
- Stating that any on- and off-duty incidents involving substances use will result in substance testing or disciplinary actions
- Disclosing whom the substance policy covers using clear terms
- Indicating the panel of substances that will be tested for and thresholds for each
- Designating when and where collecting and testing would occur
- Choosing how the results will be reported and assigning the responsibility of receiving the results to a specific person
- Electing how the results will be reported
- Outlining the consequences of a non-negative result

Individual practices stood out in the 12 policies and merit mention for their uniqueness. For example, DC Fire & EMS and FDNY's internal clinic and unit were tasked with program coordination and specimen collection. Firefighters know outright where they will be tested and by whom. Having fire personnel involved in the program may lessen anxiety and cultivate trust in the process. When internal accommodations cannot be supported, specifying the external location, as Los Angeles and Atlanta do, plainly informs those being tested, which works to clarify language. Advising what percentage of or how many personnel will be tested was outlined in seven policies.³⁵ Although these practices are noteworthy, they are not widely performed. A few noteworthy practices do not reduce the lack of clarity and provide common simplistic detail across all of the policies that could be achieved.

³⁵ DC Fire & EMS, Chicago, FDNY, Austin, San Antonio, Boston, and Dallas.

B. IMPLEMENTATION CHALLENGES AND FIRST STEPS

1. Implementation Challenges

Several implementation challenges exist to standardizing substance testing in the fire service. First, the culture of the fire service, as is the case in many organizations, is resistant to change. Second, the pursuit of a policy change sheds light on an unflattering issue, which may not be seen as a problem by some in the fire service. Not seeing substance use as a problem is the third reason standardizing testing is hard. Bringing this matter to the forefront could lead to bad publicity for fire departments and tarnish the fire service image. The same holds true if substances are found in the system of a firefighter who causes harm to another person. Fourth, unions may resist the idea of stricter policy constraints in protection of their membership. Fifth, cost myths or cost uncertainties will further complicate implementation as will the confusion over cost to have and sustain a more stringent program. Thus, obtaining dedicated funding from elected officials or city managers may be tough. Lastly, local statutes and other regulatory factors are notable barriers to implementation.

2. First Steps to Implementation

Implementing random substance testing in the fire service will need to occur in stages. Aside from fire departments independently deciding to use this method outside of a national campaign, of key importance is gaining support from federal and national agencies and groups. Obtaining endorsements from the USFA, NFPA, OSHA, NIOSH, the IAFC and the IAFF is an important first step. Career departments that comprise 8 percent of the fire service can lead the way to standardizing testing efforts. These departments are considered financially stable, administratively and operationally sound, provide continuous service, and have legal assistance readily available.

The stage at which a fire department implements random testing will be different based on local conditions. Since all fire departments function under different and countless state, local, county or municipal laws, ordinances and charters, a staggered implementation is the more pragmatic method. Performing implementation incrementally serves to ease the transition, methodically address concerns, and tweak processes as

consistency in substance-testing policy methods spread to more fire departments. Thus, in an effort to align fire department substance-testing policy with future needs, staggering implementation establishes a present commitment, sensibly reinforces the substance use message, and cultivates a comprehensive safety campaign in phases. Slowly converting to stricter testing policy is better than a complete abandoning of the concept and reflects commitment despite doubts. The benefits of revising substance-testing policy across the fire service to obtain policy consistency and address firefighter safety outweigh the risks associated with inaction.

Change is difficult. Implementation of a comprehensive substance testing policy across the fire service reflects a significant change. However, no information surfaced during the analysis or research that would signal that rejection or hesitation of this concept is warranted.

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